

ascribed to *basilinea* by its author in his Vol. I. of additions since the issue of Seitz *Pal. Noctuae*.

ORIG. DESCRIP.—“Has a pale clear brown colour of forewing running slightly into reddish, while in *lama* it is light (yellowish) grey. The females agree consistently in having the hindwings almost uniformly darker grey brownish; the central line of the hindwing is also clearly developed on the upperside. In the single ♂ obtained the colour of the forewing is more reddish than in the females; but the hindwings of the male are darker than in *lama*, although not so dark by far as those of the females of *dubiosa*. The eyes are naked as in *lama*.”

Apamea Tr. (1816-25) Tutt, Gn., Barr. [*Hadena*, Schrnk. (1802) Stdgr., Meyr., Culot: *Xylina*, Tr. (1816-25): *Trachea*, Tr. (1816-25) Hamps.: *Parastichtis*, Hb. (1827) Warr.-Seitz: *Hama*, Steph. (1829): *Luperina*, Dup. (1842)] *pabulatricula*, Brahm. (1791) = *connexa*, Bork. (1792).

Bork., *Nat. Eur. Schm.*, IV. 360, although he referred to the name *pabulatricula* (mis-spelled *papulatricula*) of Brahm, *Scriba's Beitr.* III. 259, pl. XVIII., renamed the species *connexa*, a name which stood many years for this species.

Even Treit. *l.c.* V(2). 105 (1825), used the name *connexa* giving Brahm's name as a synonym. So did Gn. and Dup.

The spelling *papulatricula* was used on the plate in Scriba but *pabulatricula* was used in the text.

Tutt *B.N.* I. 86 (1891): Barr., *Lep. Br. Is.* IV. 398, pl. 184 (1897): Stdgr. *Cat.* IIIed. 175 (1901): Splr. *Schm. Eur.* I. 196, pl. 41 (1905): *South Moths Br. Is.*, I. 273, pl. 132 (1907): Hamp. *Lep. Phal.* VII. 172 (1908): Warr.-Seitz *Pal. Noct.* III. 168, pl. 40d (1911): Culot *N. et. G.* I(1). 165, pl. 30 (1909-13).

Hb., *l.c.*, 462 (1808-18), figured a form of the species under the name *elota*, in which there was a wide transverse brown clouded band with the almost black inner-marginal square spot included. Subsequently in his *Text* Hb. p. 182 (1805-18) altered this to *connexa*.

Ernst and Ingr. *l.c.* VI., p. 116, fig. 351 (1788), figure two examples without name, the one nearer to the fig. of Brahm but darker clouded, the other closely resembling the *elota* of Hb.

Dup. *Sup. l.c.* pl. 68, 4, is a good figure but somewhat too bluish grey.

Spuler, *l.c.* 196, treats *semibrunnea*, Petersen, as the same as *elota*, Hb.

Culot, *l.c.* I(1). pl. 30, has an excellent figure.

Of the variation Barrett says—“Hardly variable except in the greater or less completeness of the broad central band, and in the tinge of brown over the grey-white ground colour.”

Barrett records a specimen, “of which the ground colour is wholly dark grey, and the central band tinged with brown.”

List of Forms and Names to be considered:—

pabulatricula, Brahm *Ins. Kal.* II(1). 395 (1791).

connexa, Bork. *Naturg.* IV. 360 (1792).

ab. *elota*, Hb. *Saml.* 462 (1808-18).

ab. *semibrunnea*, Ptrsn. *Beitr. (Lep.) Kunde Est. &c.* IV. 84 (1902).

ab. *conjuncta*, Splr. *Schm. Eur.* I. 196, pl. 41 (1905).

Tutt dealt with *elota* with ochreous central and basal area and with the typical form *pabulatricula* = *connexa*.

ab. *semibrunnea*, Petersen, *Beitr. Lep. Fn. Est. &c.* 84 (1902.)

ORIG. DESCRIPT.—“There occur examples in which the basal half of the forewings up to the reniform and the outer transverse line is uniformly brown or brown black, so that the forewings have a dark basal half and a pale marginal half.” Wesenburg-Reval.

Splr. *l.c.*, 196, says that *semibrunnea* is the same as *elota*, Hb.

ab. *conjuncta*, Splr., *Schm. Eur.* I., 196 (1905).

ORIG. DESCRIPT.—“A form in which the pale basal area (of the type) is united with the outer light marginal area by a broad yellowish white band above the orbicular and reniform along the costa.”

Apamea, Tr. (1816-25) Steph., Tutt, Barr. [*Hadena*, Schrnk. (1802) Meyr.: *Parastichtis*, Hb. (1822) Warr.-Seitz: *Oligia*, Hb. (1822) Hamps.: *Miana*, Steph. (1829) Stdgr., Splr., Culot.] *ophiogramma*, Esp.

Tutt *Brit. Noct.* I. 87 (1891): Barr. *Lep. Br. Is.* IV. 399, pl. 184 (1897): Stdgr. *Cat.* IIIed. 164 (1901): Splr. *Schm. Eur.* I. 180, pl. 41 (1906): South *Moths Br. I.* I. 274, pl. 132 (1907): Hamps. *Lep. Phal.* VII. 374 (1908): Culot *Noct. et G.* I(1). 121, pl. 21 (1909-13): Warr.-Seitz *Pal. Noct.* III. 170, pl. 40f. (1911).

Esper's fig. on pl. 182, Vol. IV., is very wooden and rough, and the darker markings are much too dark in contrast with the light ground which errs in being much too smooth and light; no lunule on h-wing.

Ernst and Engr. *l.c.*, VIII. fig. 529 is more like Esper's fig. and by no means good.

Hübner, *l.c.*, fig. 355, correct in contour of marking is too much slate in colour and no suggestion of the normal ochreous suffusion, *i.e.*, a badly coloured figure.

Treit, in 1825 said that the fig. 529 of Ernst and Engr. was better than Hübner's and much better than Esper's.

Dup. *l.c.* pl. 109 vol. VII. has a good figure but the dark area is too contrasted with the ground and there is very little trace of the yellow ochreous.

Wood's fig. *Ind.* 272, is a somewhat dark form and not like Hübner's fig. in colour at all. The former has a rich brown tone over all, the latter a pale grey or slate tone.

Freyer's fig. on pl. 75 is better than those of his predecessors but not very successful. It is between Esper's and Hübner's in general tone of colour.

South, *l.c.*, I., pl. 132 gives a good fig. except that the lighter ground hardly shows the tone of average examples.

Warr.-S., *l.c.*, pl. 40 f. has one of the best figures of the yellowish ochreous typical form.

Culot has an excellent figure, *l.c.*, I(1). pl. 21.

Since Haworth identifies his *biloba* with Hübner's figure which is not coloured as Esper's fig. and description, the name *biloba* should take the place of *ophiogramma* for Hübner's fig. This is supported by Haworth's description "*alae anticae griseae*," while Esper's figure is yellowish ochreous.

Variation according to Barrett.—"Usually not very variable."

Barrett records specimens, "having the ground colour pale slate-grey, dark slate, and smoky slate with intermediates."

He also records a specimen "which has the orbicular stigma and a blotch near the hind margin rich orange-yellow."

List of Names and Forms to be considered:

ophiogramma, Esp. *Abbil.* IV(3). 10, pl. 182 (1794?).

ophiogramma, Hb. *Noct.* 355 (1802-8).

ab. *biloba*, Haw. *Lep. Br.* 209 (1806-10).

ab. *moerens*, Stdgr. *Cat.* 164 (1901).

Tutt dealt with the typical form and ab. *biloba*.

ab. *moerens*, Stdgr. *Cat.* IIIed. 164 (1901).

FIG.—Snell. *Ent. Tijds.* pl. XII. 3 (1897).

ORIG. DESCRIP.—"Multo obscurior, al. ant. fere unicolor nigricantibus; ab. frequens."

Ground colour blackish; forewing with the grey area suffused with fuscous. (Hamp. *Lep. Ph.* VII. 375).

Apamea, Tr. (1816-25) Gn., Tutt, New. [*Hadena*, Schrnk. (1802) Fr., Culot, Splr., Steph., Stdgr.; *Parastichtis*, Hb. (1822) Warr.-S.: *Trachea*, Tr. (1816-25) Hamp.] *gemina*, Hb. (1808-18) [= *remissa*, Hb. (1808)].

Hübner, *l.c.*, figs. 482, 483 are labelled *gemina*, but 483 is obviously not a *gemina* but *thalassina*. Hübner in his *Text.* p. 193 refers to 483 only as *gemina*. Tutt, B.N., does not refer to fig. 483 but only to 482 which may be considered the type figure of the *gemina* form. This was published between 1808 and 1818.

Hübner, *l.c.* fig. 423 is labelled *remissa*, a good figure of a form with an extremely light ground and dark band. This was published in 1808, and consequently should be considered in the light of subsequent discovery that *gemina* and *remissa* are one species, the typical form and name.

Haworth, *Lep. Brit.* 189 gave a description of a moth and referred it to Hübner's *remissa* 423. This was published in 1806-1810 and must have been subsequent to Hübner. On the same page Haworth described a variety of *remissa* under the name *obscura* ("varietas praecedentis"). Whereas *remissa* was a *genistae*-like insect, *obscura* was described as "*Alae anticae magis obscurae, seu fusco-cinereae, macula magna basi costali pallidior, lineolae atrae internè adnatâ. Juxta marginem posticum striga obsoletissima undulata vix pallescens.*

Posticae cinereo-fuscescentes," and thus described and preceded the figure of *gemina*, Hübner 482.

The actual Synonymy for the two chief forms would thus appear to be according to priority.

remissa, Hub., 423 (Haw.).

f. *obscura*, Haw. (*gemina*, Hb. 482).

Both Hampson and Warren-Seitz use the name *obscura*, Haw. for this species.

The *satura* of the *Verz.* (1775) p. 84, is said to be the *gemina* form. It was described by Bork. *Naturges.*, IV. 377 (1792). Teste Wrbnrg. *Beitr.* II. 175 (1864). H.-S. *Bearb.* II. 24 (index) also teste.

Tutt *Ent.* XXII. 302 (1889): *Brit. Noct.* I. 87 (1891): *Smith Cat. Noct. N. Am.* 132 (1893): Barrett, *Lep. Br. Is.* IV. 386 (1897): *Stdgr. Cat.* IIIed. 175 (1901): *Splr. Schm. Eur.* I. 194 (1905): *South Moths. Br. Is.* I. 272 (1907): *Hamps. Cat. Lep. Phal.* VII. 180 (1908): *Warr.-Seitz, Pal. Noct.* III. 168 (1911): *Culot Noct. et. Geoms.* I(1). 162 (1909-13): *Draudt-Seitz Am. Noct.* VII. 214 (1925).

Ernst and Engr., *Pap. d'Eur.* VII. f. 471 depict a very brightly variegated form of *remissa* (1790).

Of his *obscura*, Haw. said, "Greatly allied to *remissa* and its affinities, and probably a variety."

Stephens, *Ill.* II. 181-184 treats *remissa*, *oblonga* and *obscura* as three separate species although with some doubt; and says of *oblonga*, Haw. "The resemblance between this and *remissa* is almost too close to warrant their separation."

Treit. *Schm.* V(1). 346, commends Hübner's fig. 482 as being good but the general colour too dark. He says that 483 is undoubtedly *thalassina*.

Dup. *Hist. Nat.* VI. plt. 91, has a very fair figure of *gemina* probably representing the *intermedia*, Tutt. On plt. 107, fig. 5 named *anceps*, is a very fair figure of *gemina* but too dark, black brown, for a British example.

Spuler figures *remissa*, *Schm. Eur.* plt. 40, 24 in which the sub-marginal area devoid of marking is rather too dark.

Culot *l.c.*, plt. 30 has good figures of the two dominant forms.

Freyer, *N. Beitr.* I. 49, says that Hüb. f. 483 labelled *gemina* is *thalassina* and notes the fig. of Hüb. 482 as too dark suffused. He says that Hübner's figure 423 *remissa* appears to have been drawn from an old and worn specimen whereas his own figure plt. 29 is from a fresh bred example. H.-S. says that Freyer's fig. plt. 29 is good but slightly too white in pts. and that the colour of Freyer plt. 29 is better than Hübner's 482.

Neither Hüb. nor Frey depict the uniform mottled form with lines and stigmata obscure, which we have been accustomed to call *gemina*, and which agrees so well with Haworth's description of *obscura*.

Wood, *Ind.* fig. 1663 figures *obscura* from Haworth's cabinet, p. 240, and fig. 237 depicts a *remissa* form without any lighter areas (whitish) as in the typical *genistae*-like typical fig. Hüb. 423. The black \equiv is present.

Her.-Schäf. *Bearb.* IV. fig. 584, has an exceedingly good figure of *remissa*, and, *l.c.*, IV. p. 280, says that Hübner's fig. 483 labelled

gemina is *thalassina*. He also says, *l.c.*, IV. p. 274 that he does not know an example so dark as Hübner's 482 (481 in error) and that the toothed marginal line is incorrect. He does not like the fig. 423 *remissa* of Hb. The wings are too long, the ground too light, the characteristic basal line is correct, but the central band too much emphasised and its border near the reniform far too pale.

Of the constantly recurrent "grey form with dark black blotch from \curvearrowright -like mark under stigmata, *remissa*," Barrett says—"In some examples the base of the costa is also clouded with pale grey down to the black central streak; but the central space around the stigmata and the greater portion of the basal hind marginal areas remain of the usual brown-black or purple-brown, and has a striking and distinct appearance, and is constantly mistaken for a different species or mistaken for *Hadena genistae*."

The *remissa* form "varies in shade of colour and all intermediate gradations between it and the type are met with; while in northern and western districts its peculiarities are intensified." Those from the Waterford area "unusually large, clouded with bright brown and the stigmata conspicuously yellowish-white."

Barrett records a very old example which, "has a broad and distinct stripe of pale ochreous down the median nervure, completely dividing the central dark colouring."

He also records "another of an almost unicolorous grey-brown."

And he reports a variety from Cork, "smaller dark grey, but the markings all traceable."

From near Waterford Barrett records "the more typical form tinged with red-brown, and with the stigmata yellow."

The two dominant forms *remissa* and *obscura* (*gemina*) are suggestive of two species at a glance and early authors all considered them as such; even H.-S. treats them as such.

The forms to be considered are:—

remissa, Hb. *Noct.* 423 (1808).

f. obscura, Haw. *Lep. Brit.* 189 (1806-10): Wood. *Ind.* 1663, pl. 52.

ab. *oblonga*, Haw. *l.c.*

gemina, Hb. *Noct.* 482 (1808-1818): Text p. 193.

ab. *submissa*, Tr. *Schm.* V(1). 346 (1816-25): Seitz *Pal. Noct.* III., pl. 40d.

? *anceps*, Dup. *Hist. Nat.* VII. 109 (1827) pl. 107, 5.

subsp. *indocilis*, Walk. *Cat. Noct. B.M.* IX. 178 (1856): Seitz *Am. Noct.* VII. pl. 31c.

ab. *intermedia-grisea*, Tutt *Ent.* XXII. 304 (1889): *Brit. Noct.* I. 89 (1891).

ab. *intermedia-rufa*, Tutt, *l.c.*

ab. *rufescens*, Tutt, *l.c.*

ab. *supermissa*, Splr. *Schm. Eur.* I. 194 (1905).

Tutt dealt with (1) *gemina* and (2) *obscura*, the obscure form; (3) the intermediate form *oblonga* with dark costa and fascia and pale stigmata; (4) and (5) *intermedia-grisea* and *intermedia-rufa* both with the dark \curvearrowright mark; (6) *remissa* the *genistae*-like form; (7) *rufescens*, a red or brown grey mottled form.

cinereous, with two transverse lines and very broad borders of a brownish hue." New York; Massachusetts.

ab. *supermissa*, Splr. *Schm. Eur.* I. 194 (1905).

ORIG. DESCRIP.—“The basal area on the inside of the transverse line, also frequently the costa, becomes considerably paler, and the greyish white or yellowish colour extends much forward, joining with the reniform, while the pale orbicular stands out in the dark central area and inside the waved line there is only the dark claviform near vein III. but the marginal area outside the waved line is much darkened.”

Apamea, Tr. (1816-25) Fr., Gn., New. [*Polia*, Tr. (1816-25) H.-S., Bdv.: *Trachea*, Tr. (1816-25) Hamps.: *Hadena*, Schrnk (1802) Fr. Stdgr., Splr.: *Parastichtis*, Hb. (1822) Warr.-Seitz.] *unanimis*, Hb. (1808-18).

Tutt. *Brit. Noct.* I. 90 (1891): Barr. *Lep. Br. Is.* IV. 387 (1897): Stdgr. *Cat.* IIIed. 175 (1901): Splr. *Schm. Eur.* I. 195 (1905): South *Moths Br. Is.* I. 273 (1907): Hamps. *Lep. Phal.* VII. 184 (1908): Warr.-Seitz. *Pal. Noct.* III. 168 (1911): Culot, *N. et G.* I(1). 163 (1909-13).

Hübner's fig. 556 the type is not a good one. The distinguishing characters of the species such as the reniform, are scarcely in evidence. H.-S. says it is recognisable.

Newman's figure, p. 305, is too large, and also depicts the reniform badly. Unaccountably the text says "larger" than *gemina*, whereas it should be "smaller."

Guenée, V. 209 (1852), says that no good figure had yet been made of it.

Freyer, *N. Beitr.*, 144 says that because of the close resemblance of the larva of this species to those of *gemina* and *rurea* he thinks it would better be classified in the genus *Hadena* than in *Apamea*.

Freyer's fig. pl. 371, is good although the markings are somewhat too bold. H.-S. says this fig. is good.

Steph., *Ill.* III. 9 (1829), never having seen it, and trusting to Treit.'s remarks, doubts it as a species. He accepts, *l.c.* 8, the *secalina* of Haw. as a species.

Treit., *Schm.* X(2). 62 (1834), in a long dissertation suggests that *unanimis* is connected with *didyma* but, in his *Sys. Verz.* p. 250, places it as a var. of *gemina*.

Wood has a recognisable figure, *Ind.* 265 (1834).

Warr.-Seitz., *Pal. Noct.* pl. 40c has a good figure of the typical form and figs. of *secalina*, and of each of his three newly described forms (see below).

Of the Variation Barrett says—"A little variable in the depth of the ground colour, more so in the extent and intensity of the red-brown or dark marbling; this last being in some individuals almost absent from the dorsal margin and from a broad band beyond the second line, while in others it is uniform to the exclusion of central darker clouding."

Barrett records "one having a broad pale yellow-brown band before the hind margin."

The forms to be considered are:—

unanymis. Hb. Noct. 556 (1808-18).

f. *secalina*. Haw. Lep. Brit. 210 (1806-10): Seitz *l.c.* pl. 4c (1911).

scortea, H.-S. (Led.), *Sys. Bearb.* II. Nach. I. 57, fig. 583 (1845).

ab. *rufithorax*, Warr.-Seitz, *Pal. Noct.* III. 168, pl. 40c. (1911).

ab. *fasciata*, Warr.-Seitz, *l.c.* pl. 40d.

ab. *semiochrea*, Warr.-Seitz, *l.c.* pl. 40d.

ab. *nigrobrunnea*, Hoffmn., *Zt. Oest. Ent. Ver.* I. 14 (1916).

Tutt dealt with the two forms (1) *unanymis* without the \neg mark and without central dark band. (2) *secalina* with the \neg mark and with a darker central area.

f. *scortea*, H.-S. (Led.).

Staudinger, *Cat.* IIIed. (1901), included the *scortea*, H.-S. fig. 583, as this species. H.-S. says, *Nachtr.* to vol. II. p. 57, that although Lederer considered figs. 482-483 as representing a new species which he named *scortea*, he himself considered that they were both forms of *gemina*. The figures are both a close approach to fig. 484 which is rightly named *remissa*, of which it is a good figure.

Hampson put *scortea* as a syn. of *unanymis*, and Warr.-Seitz does the same.

ab. *rufithorax*, Warr.-Seitz, *Pal. Noct.* III. 168 (1911).

FIG.—*l.c.* 40c.

ORIG. DESCRIPT.—"With black streak on submedian fold, sometimes with paler basal and submarginal areas, and has the whole head and thorax including the patagia bright rufous." Wiesbaden.

ab. *fasciata*, Warr.-Seitz, *l.c.*

FIG.—*l.c.* 40d.

ORIG. DESCRIPT.—"Has the median area filled up with dark fuscous, the pale upper stigmata and the inner and outer lines more conspicuous; the head and thorax blackish."

ab. *semiochrea*, Warr.-Seitz, *l.c.*

FIG.—*l.c.* 40d.

ORIG. DESCRIPT.—"Has the postmedian area between outer and submarginal lines and the lower part of the median area pale ochreous, and might easily be mistaken for an example of *secalis* ab. *oculea*, Guen."

ab. *nigrobrunnea*, Hoffm. *Zeit. Oest. Ent. Ver.* I. 14 (1916).

ORIG. DESCRIPT.—"Dark brown, almost without marking. The generally light transverse markings are not apparent. The most that can be distinguished is the outer line towards the inner margin. The stigma is outwardly—as in the typical form—finely white margined. This form corresponds to the *leucostigma* form of *H. secalis*." Bred from Krieglacher.

Apamea, Ochs. (1816-1825) Fr., Tutt, Barr., South. [*Hadena*, Schrnk. (1802) Stdgr., Splr., Cul., Meyr.: *Trachea*, Tr. (1816-25) Hamp.: *Polia*, Tr. (1816-25) Hb. (1806) H.-S.: *Parastichtis*, Hb. (1827) Warr.-Seitz,] *didyma*, Esp. (1786) = *oculea*, L. (1761) = ?? *secalis*, L. (1758).

The dates of the publication of the sections of Vol. IV. of Esper (*Noct.*) are unknown except that on the title-page of IV(1) is the date 1786. Most of the plates were issued long before the letterpress and descriptions, hence early authors attributed the name *didyma* to Borkhausen. Borkhausen himself refers to Esper's plate but not to the page, hence we may infer that Esper's text dealing with plate 126 was not issued until after Borkhausen's *Noctua* Vol. IV. was published. Esper has priority. And we find that Esper's text p. 378, to plate 126 f. 7, refers to Borkhausen's text, p. 465. Bork. calls 126, f. 7, *oculea*, Fb. but Esper says that cannot be as it has the characteristic black line of *didyma* above the inner margin.

Guenée says that *didyma* is the *oculea* of Linné and Fabricius. But we have shown ante p. (167). that *oculea*, L. is the prior name of *nictitans*, Linn. Hence *didyma*, Esp. is the priority name.

Werneburg *Stett. e. Zt.*, 52 (1858), identified *secalis*, L. as *stramentalis*, Tr. This, after becoming acquainted with the citation quoted by Linn., viz. Rolander in *Acta Holm.* 62 (1752), he considered an error, and said that on the evidence of all three stages it was the *ochrolenca*, Tr. cf. Fuess. *Neu. Mag.* II. 355.

Schöyen, *Stett. e. Zt.* 389 (1879) discusses the identity of *secalis*, L. at great length and finally decides that *didyma*, Esp. is *secalis*, L. in spite of Linné's own statement that it is a Pyrale. Stdgr., Hamp., South, and Warr.-Seitz use *secalis*, while Meyr. uses *didyma*.

Werneburg, ascribes the *brunnea*, Hüfn. to *didyma*, Tr. Hufnagel's description runs "Whitespot, dull brown with darkbrown shading and a white spot in the middle of the fore-wing," which Werneburg says denotes the lighter variety of *didyma*. He goes on to say that the citation of Kleemann. pl. X. fig. B. by Rottemburg to *brunnea*, Hüfn. is quite excusable, since the figure is so poor, but that the notes of Kleemann are quite conclusive that he was giving a figure of *nictitans*.

Tutt. *Brit. Noct.* I. 91. (1891): Barrett, *Lep. Br. Is.*, IV. 394 (1897): Stdgr. *Cat.* IIIed. 175 (1901): Splr. *Schn. Eur.* I. 195. (1905): South, *Moths. Br. Is.* I. 274 (1907): Hamp. *Lep. Phal.* VII. 211 (1908): Warr.-Seitz., *Pal. Noct.* III. 171 (1911): Culot *Noct. et G.* I(1). 163 (1909-13).

Ernst. and Engr. *Pap. d'Eur.* have 9 figs. on pls. 256-7 Vol. VI. Treit. *l.c.* V(2) 87 points out that Hb. in his text cites *secalina* to no. 19 on p. 183 instead of to no. 18. the fig. Hb. 420 being *secalina*.

Freyer says, *Neu. Beitr.* I. 139, that Esper's fig. 6 on pl. 47 (126) as well as the accompanying description belong to true *nictitans* = *chrysographa*, Hb.; but that fig. 7. *l.c.* was certainly *didyma* to which Hübner's fig. 420 *secalina* was undoubtedly to be referred.

Freyer, *Neu. Beitr.*, pl. 443, has two figs. of *didyma* both good. The second is very comparable to the *vilis*, Hb., but has the white markings, lines and dots very delicately put in, while in Hb's fig. they are very thick and hard. The ground colour is the same.

H.-S., *Bearb.* II. 274, criticising figures of authors, says, Freyer. I. plt. 75 recognisable; Hb. 619, 620 (*nictitans*) usual red-brown specimens; Hb. 97 quite unrecognisable; Hb. 420 (*secalina*) a large fresh coloured example; Hb. 511 (*vilis*) "I can in no sense place it here." He puts *oculea*, Fb. and *leucostigma*, Esp. as synonyms of *didyma* (Bork.) Esp.

H.-S. says, *l.c.* II. 275, "The colour of *moderata* is brown-grey duller than that of all specimens of *didyma*. The reniform is smaller, narrower, without any appearance of white, the marking on the inner portion of the margin very sharp, veins 3 and 4 are somewhat lighter where they start from it." The example was supplied by Eversmann himself.

Warr.-Seitz. gives 12(10) figures. 1. *I-niger* should be *I-niger-albo*, 2. *didyma*, 3. *oculea*, 4. *rava* should be *rava-flavo*, 5. *grisea* probably *grisea-flavo*, 6. *reticulata* should be *reticulata-flavo*, 7. *nictitans* but does not show the black — characteristic of *nictitans*, 8. *leucostigma* should be *albostigma*, 9. *pulverosa*, and 10. *lilacina* both new forms, 11. *moderata* treated as a true species, 12. *struvei* also treated as a true species.

Culot, *N. et G.*, I(1), gives beautiful figures of *oculea*, Gn., *secalis*, *armoricæ*, *nictitans*, *leucostigma*, *lugens*, *struvei* (2). Neither of the two figures of *struvei* are pure white in the characteristic area, as descriptions in Hamp., Seitz and Culot state.

Barrett describes the variation thus:—"Variable in an extraordinary degree in all localities. The most abundant is that of those having the forewings brown in some shade, marbled or mottled *all over* with darker; but one of extreme frequency has also a faint or more distinct central band from a blackening of the space between the first and second lines; and another, also plentiful, has the dorsal margin and the broad band between the second and subterminal lines of some light bright brown, while the enclosed portion forms a very large, darker red-brown, purple brown, or umbreous triangle along the costal half of the wing; these characters are partially combined in those specimens which with the broad pale hinder band have a dark central space, and in these there is in some individuals a deep black horizontal bar, above the dorsal margin, joining the first and second lines.

"Another and rather different range of variation is of uniform deep purplish brown to brown black, or dull black, often with the subterminal line more visible and yellow, or dotted with yellow; often also with blacker marbling on the central band; very often with a brightly contrasting yellow, orange, or white reniform stigma. It may be remarked that this stigma is most eccentric in colour, varying through yellow, brown, and white, in every different form of the insect, and apparently in no way governed by any tendency in them to be darker or paler. In all varieties the thorax follows the colour of the forewings, except that the back crest, or the portion lying between its tufts is erratic in colour, usually not differing, but in some examples without reference to their colour, yellow, orange, reddish-brown, or even chestnut."

Barrett records a specimen, "of which the dorsal half of the wing and the broad hinder band are of a pale *cream* colour, with the costal region and hind marginal clouds blackish brown."

He also records another "from Ireland which is actually tinged with rosy-purple."

The names and forms to be considered are as follow.—

- [*secalis*, Linn. *Sys. Nat.* Xed. 519 (1758).]
 [*oculea*, Linn. *Fn. Suec.* 132 (1761)].
 ?? *bombycina*, Hufn. *Berl. Mag.* III. (1766).
didyma, Esp. *Abbild.* IV. 378. plt. 126. 7 (1786).
 ab. *lancea*, Esp. *l.c.* IV(2). 663. plt. 174 (1786?).
 ab. *nictitans*, Esp. *l.c.* IV. 375. plt. 126. 6 (1786).
 ab. *leucostigma*, Esp. *l.c.* IV(2). 542. plt. 159 (1786?).
lamda, View. *Tabell.* II. 81 (1790).
 ab. *secalina*, Hb. *Noct.* 420 (1808).
 ab. *I-niger*, Haw. *Lep. Brit.* 210 (1806-10).
 ab. *rava*, Haw. *l.c.* 209 (1806-10).
 [ab. *secalina*, Haw. *l.c.* 210 (1806-10).]
 ab. *furca*, Haw. *l.c.* 209 (1806-10).
 ab. *lugens*, Haw. *l.c.* 212 (1806-10).
 ab. *vilis*, Hb. *Noct.* 511 (1808-18).
 ab. *moderata*, Evers. *Bull. Mosc.* 547 (1843).
 ab. *oculea*, Gn. *Noct.* V. 210 (1852).
 ab. *struvei*, Rag. *Nat. Sicil.* IV. 274, plt. 4. f. 7 (1885). Culot *N. d*
G. I(1). 164 (1909).
 ab. *grisea-albo*, Tutt. *Brit. Noct.* I. 93 (1891).
 ab. *grisea-flavo*, Tutt. *l.c.*
 ab. *reticulata-albo*, Tutt. *l.c.*
 ab. *reticulata-flavo*, Tutt. *l.c.*
 ab. *secalina-albo*, Tutt. *l.c.*
 ab. *secalina-flavo*, Tutt. *l.c.*
 ab. *I-niger-albo*, Tutt. *l.c.*
 ab. *virgata-albo*, Tutt. *l.c.*
 ab. *virgata-flavo*, Tutt. *l.c.*
 ab. *oculea-flavo*, Tutt. *l.c.*
 ab. *rufa-albo*, Tutt. *l.c.*
 ab. *rufa-flavo*, Tutt. *l.c.*
 ab. *nictitans-linea*, Tutt. *l.c.*
 ab. *secalina-linea*, Tutt. *l.c.*
 ab. *rava-flavo*, Tutt. *l.c.*
 ab. *didyma-flavo*, Tutt. *l.c.*
 ab. *furca-flavo*, Tutt. *l.c.*
 ab. *nigra-albo*, Tutt. *l.c.*
 ab. *nigra-flavo*, Tutt. *l.c.*
 ab. *lugens-flavo*, Tutt. *l.c.*
 ab. *alhostigma*, Tutt. *l.c.*
 ab. *uniformis*, Splr. *Schm. Eur.* I. 195 (1905).
ochracea, n.ab. (Hamp.) *Cat. Lep. Ph.* VII. 212 (1908).
 ab. *atrocyanea*, Krul. *Rev. Russe.* IX. 307 (1909).
 ab. *armoricae*, Cul. (Obthr.) *Noct. et G.* I(1), 164. plt. XXX. f. 7
 (1909-13).
 ab. *lilacina*, Warr.-Seitz. *Pal. Noct.* III. 171. plt. 40b. (1911).
 ab. *pulverosa*, Warr.-Seitz. *l.c.*
 ab. **binota**, n.ab.
 ab. **albo-excessa**, n.ab.

Tutt dealt with the following forms:—

A. Ground colour:—Whitish grey, grey, or yellowish grey.

I. Unicolorous form.

1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{grisea-albo.} \\ b. \text{ Ochreous reniform} = \textit{grisea-flavo.} \end{array} \right.$

II. Reticulated form.

1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{reticulata-albo.} \\ b. \text{ Ochreous reniform} = \textit{reticulata-flavo.} \end{array} \right.$
2. With \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{secalina, var. } \gamma, \text{ Haw.} \\ b. \text{ Ochreous reniform} = \textit{secalina-flava.} \end{array} \right.$

III. Central banded form.

1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{virgata-albo.} \\ b. \text{ Ochreous reniform} = \textit{virgata-flavo.} \end{array} \right.$
2. With \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{I-niger-albo.} \\ b. \text{ Ochreous reniform} = \textit{I-niger, Haw.} \end{array} \right.$

IV. Dark costal form.

1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{oculea, Gn.} \\ b. \text{ Ochreous reniform} = \textit{oculea-flavo.} \end{array} \right.$

B. Ground colour:—Ferruginous red, reddish brown, or purplish brown.

I. Unicolorous form.

1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{rufa-albo.} \\ b. \text{ Ochreous reniform} = \textit{rufa-flavo.} \end{array} \right.$

II. Reticulated form.

1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{nictitans, Esp. Hb.} \\ b. \text{ Ochreous reniform} = \textit{secalina, Hb.} \end{array} \right.$
2. With \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{nictitans-linea.} \\ b. \text{ Ochreous reniform} = \textit{secalina-linea.} \end{array} \right.$

III. Central-banded form.

1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{rava, Haw.} \\ b. \text{ Ochreous reniform} = \textit{rava-flavo.} \end{array} \right.$
2. With \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{didyma, Esp.} \\ b. \text{ Ochreous reniform} = \textit{didyma-flavo.} \end{array} \right.$

IV. Dark costal form.

1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{furva, Haw.} \\ b. \text{ Ochreous reniform} = \textit{furva-flavo.} \end{array} \right.$

C. Ground colour:—Black.

I. Unicolorous form.

1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{nigra-albo.} \\ b. \text{ Ochreous reniform} = \textit{nigra-flavo.} \end{array} \right.$

II. Reticulated form.

1. Without \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{lugens, Haw.} \\ b. \text{ Ochreous reniform} = \textit{lugens-flavo.} \end{array} \right.$
2. With \dashv mark $\left\{ \begin{array}{l} a. \text{ Whitish reniform} = \textit{albistigma.} \\ b. \text{ Ochreous reniform} = \textit{leucostigma, Esp.} \end{array} \right.$

Warr.-Seitz. says (1) *lauda*, View., *lancea*, Esp., *rilis*, Hb. are synonyms of *secalis*, L. (2) ab. *didyma*, Esp. is *secalina*, Hb. (3) ab. *oculea*, Gn. is doubtfully *oculea*, L. (4) ab. *reticulata*, Tutt is doubtfully ab. *uniformis*, Splr. (5) ab. *leucostigma*, Esp. is *lugens*, Haw. + *nigra*, Tutt, + *albistigma*, Tutt. (6) Treats *moderata*, Ev. as a true species, "Quite distinct from *secalis*," (7) Treats *struvei*, Ragusa as a true species.

Tutt considered *moderata* as doubtfully the same as ab. *grisea*.

secalis, Linn. *Sys. Nat.* Xed. 519 (1758).

ORIG. DESCRIPT.—“*Noctua spirilinguis cristata*, alis deflexis : superioribus griseo-fuscis striatis : macula reniformi A latino.”

This species was not included in the *Fn. Suec.* (1761) by Linn. but in the *Sys. Nat.* XIIed. 882 (1767) it was transferred to the Pyrales.

bombycina, Hüfn., *Berl. Mag.* III. 410 (1766).

Werneburg *Beitrag*e I. 252 (1864) says “Concerning *bombycina* of which Rottenburg found no longer in Hufnagel’s collection, the diagnosis runs “Grey with brown markings, a whitish encircled space and white reniform stigma. On the stems of trees. Rare.” Since this deals with a moderately large noctuid, and Hüfnagel mentions no transverse lines, which are certainly very non-apparent in *advena*, and for which also the rest of the diagnosis passes, I consider my determination as well grounded.” *i.e.* = *advena*.

ab. *lancea*, Esp. *Abbild.* IV(2). 663, pl. 174, 5 (1786?).

This figure may be anything. Werneburg says that this is *brunnea*, Hüfn. = *didyma*, Tr. From the description one infers that this *lancea* is none other than a variety of *didyma* with lighter suffused bands and coppery red terminations of the stigmata.

Esper’s description is a long one. The ground colour is reddish strewn with black spots and atoms. A light submarginal band bordered on both sides with a yellowish line, curved inwards and toothed near the costa outwardly. From this band extends above the inner margin a broad blacker streak, elongated both ways. The stigmata are also margined with yellowish. The reniform has two black dots towards the inner side and a similar black lunular-streak. The oval stigma is lengthened. The outer margin has yellowish dots and the edge is black brown. The hind wings and the undersides are of pale red-colour and only have an obsolescent blackish marginal area. Both sides are somewhat glossy.

The description and the figure do not agree, both being unsatisfactory.

landa, View. *Tabell.* II. 81 (1790).

ORIG. DESCRIPT.—“The fore-wings are yellowish brown on the outer margin. Across the disc runs a brown transverse line, margined on both sides by a pale line; on the outer side of this, there lies, towards the upper margin a brown whitish mixed reniform stigma, and before this another circular spot wholly brown and almost obsolete; under it lies a black longitudinal line running out to two points. On the outer margin stands a small black spot white in the middle just in front of which lies an angled pale transverse line. Besides this one finds a short black streak at its commencement. The body and hind wings are dark grey.” Berlin.

Werneburg, II. 216, says this is the *brunnea*, Hüfn, and the *didyma*, Tr. This is accepted by Hampson (*Lep. Phal.*)

ab. *vilis*, Hb. *Saml. Noct.* 511 (1808-18) *Text.* 175 (1805-18).

ORIG. DESCRIPT.—“Red brown : Head and thorax dark scaled : the forewings very dark, with chalk white reniform and waved-lines, which are mostly broken up : the lower wings and abdomen brownish grey,

S. Tyrol." This is an inadequate description of a very remarkable specimen (aberration) which H.-S. says he can under no consideration place here. Hampson accepts it as a synonym of *didyma*.

Description of *vilis*, Hb. fig. 511.

The size of *didyma*. Of a very dull uniform brown with a slight shade of chestnut in it. The markings, chalky white and very conspicuous, consist of 2 or 3 small white dots near base of costa, a line midway between base and reniform somewhat waved, a reniform a large white blotch with a dark curved line in the middle, the curve hollow outwards, a broken continuation of this stigma to costa and to inner margin, a few spots from costa parallel with the reniform, a row of submarginal dots, with lighter brown fringes. Possibly the spots outside the reniform and those below may represent the elbowed line much broken in the middle.—Hx. J.T.

ab. *moderata*, Evers. *Bull. Mosc.* III. 547 (1843).

FIG.—Seitz. *Pal. Noct.* III. pl. 40h.

ORIG. DESCRIP.—“Alae anticae olivaceo fuscae, nebulosae, fascia lata externa pallidiore unicolore;—posticae fuscescentes.”

“Of the same size and appearance as *didyma* and similar to it.

“Alae anticae a basi usque ad strigam seu lineam transversam externam ordinariam olivaceo-fuscae, nigro-nebulosae, linea transversa interna maculisque ordinariis pallidioribus, his fusco inscriptis: extra lineam externam sequitur, fascia seu spatium latum olivaceo-fuscescens unicolor, sine umbris, externe spatio angustissimo terminali bis sinuato limitatum; cilia fusca, pallido-varia. Alae posticae fuscae, aut fuscescentes, externe sensim obscuriores. Subtus alae sericeo-nitidae: antice e luteo et griseo fusconigricantes; posticae sordide lutescentes, pulvere fuscescenti paululum adpersae punctoque medio obsoleto: omne margine externo pallidiore strigae externa obsoleta obscuriore.”

Habitat in promontariis Uralensibus.

ab. *moderata*, Evers. *Fn. Volg.* 240 (1843-1844).

FURTHER NOTES.—A further description appeared in *Fn. Volg.* 1844 = 1843 (see back of title-page.)

“Alae anticae thoraci concolores, fusco-olivaceae, fusco-nebulosae, spatio submarginali latiusculo, olivaceo unicolore, spatio terminali angustissimo fusco, maculis ordinariis pallide circumscriptis;—posticae fuscescentes.”

“Very like *didyma*, differs by the olivaceous colour and by the submarginal area being devoid of clouding. Habitat in the Ural mountains, etc.”

In his 1856 notes he uses the word “pallidiore” of the subterminal area and adds “lineis medianis crenulatis fuscis” and “linea subterminali sinuata, edentata.” He adds “southern” to Ural Mts.

This seems to be exactly like *didyma* in disposition of marking, size, etc. but is of a distinct colour, suffused somewhat with olivaceous.

ab. *struvei*, Ragusa, *Nat. Sicil.* IV. 274 (1805) pl. 4.

The author does not describe the aberration but refers it to the description given by Berce, *Noct. France* III. p. 106 (1870).

ORIG. DESCRIP.—“Basal and subterminal areas white.” On his plate Ragusa figures a “*didyma*” form as *struvei* which does not agree with the above description at all and must be discarded. Its description

is "base dark mottled to the first transverse line or band which is white centred by a dark line, making really a doubled line. The discal area is similarly dark mottled, the reniform having a still darker centre with a well defined broad white line along its inner margin. The immediately succeeding white band is fairly wide but split up into three by two dark lines. Outside this the marginal ground is of the same mottling with a portion of a wide white line just below the apex losing itself in the ground about the middle of the margin." This figure certainly does not apply to the described *struvei*.

Hampson says "suffused with white." But the figure is *not* so.

Culot, *Noct. et G. I.* (1), pl. 30, 11, figures a specimen in Turati's collection sent to him by Ragusa himself in which the basal and subterminal areas are suffused with very light coloration and may be accepted as typical instead of the figure in *Nat. Sicil.*

ab. *uniformis*, Splr. *Schm. Eur.* I. 195 (1905).

ORIG. DESCRIP.—"A unicolorous, very slightly finely marked reddish yellow grey distinct form, which is found far and wide but very sparsely."

ab. *atrocyanea*, Krul. *Rev. Russe.* IX. 307 (1907).

ORIG. DESCRIP.—In Russian only "Alis anticis atris, cyaneo micantibus, picturis omnibus indistinctis, macula reniformi nivea." Very rare in the oriental provinces of Russia.

ab. Hamp. *Cat. Lep. Ph.* VII. 212 (1908).

ORIG. DESCRIP.—"Fore-wing rufous, the costal area to subterminal line, the cell and area below it to submedian fold, and the terminal area except at apex suffused with fuscous." This is very much like Tutt's *furca-flavo*.

ab. Hamp. *Cat. Lep. Ph.* VII. 212 (1908).

ORIG. DESCRIP.—"Forewing with the ground colour brownish ochreous, the costal area to subterminal line, the cell and area below it to submedian fold, and the terminal area except at apex suffused with fuscous." This does not appear to fall in Tutt's scheme, and I suggest the name ab. **ochracea**, ab. nov.

ab. *armoricae*, Obthr. *Culot. Noct.* I. 164 (1909-13).

FIG.—*l.c.* pl. XXX. f. 7.

ORIG. DESCRIP.—Culot does not describe in words this striking (*très claire*) aberration, but figures it on plate 30, of vol. I of his *Noct. et Geom.* fig. 7 under the name *armoricae*. The specimen was taken at Huelgoat, Finistère.

The coloration is of a very light ochreous sandy shade, the forewings somewhat darker basally, with blackish claviform tie to the two weakly expressed transverse lines, an orbicular defined by two oblique curves, a reniform less clearly defined but with a pure white centre, and a few scraps of marginal markings. The hindwings uniformly pale. I have not seen an example with the colour and markings so washed out as it were.

ab. *armoricae*, Obthr. var. taken by Dr. Cockayne.

ORIG. DESCRIP.—"A whitish insect, ground colour palest grey with

slight yellow or ochreous tint. The markings are very distinct, those limiting the orbicular and reniform nearly black and the bar posteriorly also nearly black, those below the stigmata and near the termen, very dark grey-brown, those at base and apex palish grey-brown." ♀ Oxshott.

This would appear to be a variation on *armoricae*, Culot, N. et. G. I(1). pl. 30. 7. in which the ground is paler and the marking more emphasised in black.

ab. *lilacina*, Warr.-Seitz *Pal. Noct.* III. 171 (1911).

FIG.—*l.c.* 40h.

ORIG. DESCIP.—“Has a dull lilac grey ground colour in basal and postmedian areas, with the median area and the terminal more diffusely dull rufous brown; the inner and outer lines and the reniform stigma filled up with lilac grey; pectus and legs paler but strongly tinged with violet; anal tufts fulvous.” *Silvaplana*, Engadine.

ab. *pulverosa*, Warr.-Seitz *Pal. Noct.* III. 171 (1911).

FIG.—*l.c.* 40h.

ORIG. DESCIP.—“Somewhat like ab. *reticulata*, Tutt, but darker, suffused with brown and clouded, especially along costa, with blackish fuscous, in places thickly irrorated with whitish scales; veins strongly dusted with dark and pale scales: inner and outer lines distinct, filled up with ochreous; subterminal line brownish ochreous preceded by a deep brown cloud and followed by dull blackish terminal blotches on both folds; claviform and orbicular dull, brown, with black edges; reniform large, the inner half dark with a dark edged central brown lunule, the external margin yellow ochreous, except at lower end, which is white; hindwing dark fuscous, head and thorax black brown.” *Pescocostanza*, Italy.

binota, n. ab*.

ORIG. DESCIP.—“The ground colour is nearly black. The reniform is white and there runs out from it to the line limiting the central area a further patch of white.” Forres. The appearance is as if the reniform were duplicated. Dr. Cockayne has seen two *rava* with the same additional white mark.

struvei-excessa, n. ab.

ORIG. DESCIP.—“Ground colour white, markings nearly black. The broad submarginal area is white, the basal area very largely white, and thus far resembling *struvei*, Ragusa, but in addition the area uniting these two areas along the inner margin is white and very wide, with only a thin irregular line crossing it, the vestiges of the transverse line.” ♀ Kingsgate.

Miana strigilis and *M. latruncula*.

For many years a number of named forms have been associated by most collectors with that known as *strigilis*. But now and again the real student of the lepidoptera felt that there were at least two species

* I think any form with the additional white should fall under this name. Mine happened to be blackish, but the two others were *rava*. All three were from Forres.—E.A.C.

associated together (1) that which was generally the larger and with chalky white colour and (2) that which was smaller and sturdy of a black, black brown, or reddish tinge usually. But not until the advent of the study of the genitalia was there any stable character to differentiate the two with certainty.

In 1907 in the *Schrift. Phys. oek. Ges. Konigs.* p. 75, Dampf differentiated the two species by their genitalia. And in the same year Petersen in a more detailed paper in the *Rev. Russe. d'Ent.* vol. VII. p. 206, showed definitely that *latruncula* was not a form of *strigilis*. Both the above communications appeared in local and little distributed publications, and the information was more or less hidden from general knowledge.

DIFFERENTIATION BY GENITALIA.

Genitalia of *Miana latruncula* and of *M. strigilis*.

Dampf. *Schrift. Phys. oek. Ges. Konigsb.* p. 75 (1907).—" *Latruncula* is not an ab. or a var. of *strigilis*, but a true species, as Rossler rightly conjectured. The examination of the genital organs give a constant difference between the two forms. The tooth on the lower margin of the valve in the ♂ of *M. strigilis* is long and pointed (bodkin-like), in *M. latruncula* shorter and conical; we also found a similar difference in the snout-like apex bent downwards at the free-end of the valva. The other differences are best seen on the attached figure. The ♀ of *M. strigilis* possesses a distinctly longer "ductus bursae" which before the ostium of the bursa is swollen out into a globular shape. In *M. latruncula* the ductus is shorter and shows no striking enlargement. Similarly constant distinctions are found between the outer genital-organs of the females of the two species." Figures of the male organs of the two species were given.

Petersen *Rev. Russe. d'Ent.* VII. 206 (1907).—After referring to Rossler's conjecture and to the discovery of Dampf that it was an actual fact that *latruncula* was neither an ab. nor a var. of *strigilis* but a good species, Petersen goes on to confirm the discovery, and gives figures of the organs of both sexes of both species more in detail than does Dampf. He says that the distinctions of the two species are so constant in a long series of examples without any intermediate occurring, that it leaves no doubt whatever but that there are two species. He has examined Estland, German and Tyrolese series. "The valve of the ♂ shows the *Hadena*-type of modification; the axe-shaped form of the distal end of the valve is rounded at the front angle, produced at the back angle into a continuation, which in profile looks not unlike the head of a bird; the "bill" in *strigilis* is distinctly longer than in *latruncula*, in the former 4 times, in the latter twice, as long as the width. The projection arising from the lower edge of the valve is in *strigilis*, as Dampf stated, bodkin-like and longer, in *latruncula* conical and shorter. At the base of this projection on the basal side of the upper margin of the pocket, one finds a projection in *strigilis*, which is absent in *latruncula*. At the foot of the penis-body in *latruncula* in front and below lies a strong conical tooth, while in the corresponding position in *strigilis* there is only to be seen a chitinous thickening with three fine points. In the ♀ the essentially distinctive character, by which one can with certainty distinguish the species, lies

in the surround of the ostium of the ductus bursae. In *strigilis* this is abruptly strongly widened, developed almost globular, deeply indented on the outer side, in *latruncula* it is only shallow and gradually runs into the ductus bursae. The inner chitinous plate margining the ostium ventrally is wide in *strigilis*, narrower in *latruncula*." There are further differences. Petersen based his results on the examination of at least 1700 examples.

Two years later we have the evidence of a British observer as follows:—

Genitalia of *Miana strigilis*, Pierce, *Noctuidae* p. 33, pl. xiii. (1909).

"I examined a great number of this, and the other species of the *Miana*, of every variety." "Harpe angulated, with corona; cucullus divided, the anal angle produced and lobed, the lobe being thickly clothed with spines; below the cucullus on the outer edge is a straight arm; clasper not produced; ampulla rounded; clavus peaked, bulbed at the base, and clothed with short hair; uncus narrow waist, diamond pointed; vesica with curved bulbed cornutus; juxta without side spines."

It is very remarkable that not a single *latruncula* was found in the great number examined. For the skill of the observer is unassailable.

At a meeting of the South London Entomological Society in April, 1930, Mr. W. H. T. Tams stated that he was convinced that under the name *strigilis* there were two definite species and illustrated his remarks by sketches of the genitalia.

Dr. E. A. Cockayne has independently confirmed the observations of Dampf and Petersen and has no doubt whatever that there are two species which he can readily distinguish by their facies.

DIFFERENTIATION BY MARKING, ETC.—Dr. Cockayne says "I have examined genitalia of many British specimens from various places and find no difficulty in dividing them correctly by eye first. There are no intermediate genitalia. Both have forms with and without the black bar as in *didyma*. (This is probably inherited as an independent character in these species and in *didyma*)."

"*Strigilis*. Almost always larger.

"(1) Various black and white forms from very pale to very heavily and darkly marked.

"(2) Suffused all over with grey—no brown tinge.

NOTE.—"I have two *strigilis* as black as the black *latruncula*, one with the black bar the other without, and two with the usual white markings somewhat suffused with grey.

"I have seen one British brown *strigilis* and such are said to occur on the continent." He further says (*in lit*).

"I see no clear cut division between the lightest *strigilis* and the darkest of these with white markings. Nor do I see any clean cut division between the various forms of *latruncula*."

"Both *strigilis* and *latruncula* have forms with and without the black bar below the stigmata.

"I have a *latruncula* with greyish white (nearly white) submarginal band but the stigmata are of the same colour as the ground, darkish grey brown and the other markings are not much darker; the termen is also bordered with uniform grey brown. It has none of the clean cut black and white of *strigilis*."

Latruncula. Smaller.

"All shades of brown to unicolorous black. The palest do show some definite markings much like those of pale *strigilis*.

"I have a single specimen with white and blackish markings rather like a *strigilis*."

In the *Proc. S. Lond. Ent. Soc.* p. 39 (1930-31) I have summed up the recorded differences between *strigilis* and *latruncula* as follows.—"*Strigilis* has a somewhat larger expanse than *latruncula*; ♂ up to 26 mm., ♀ 28 mm., against 24 mm., (*latruncula*) and has somewhat narrower and more pointed forewings. In typical *strigilis* the ground colour is a pure blackish grey without brown powdering, while *latruncula* is brown. The marginal area in *strigilis* has chalk white in it, replaced in *latruncula* with pale brown suffusion, although some may have impure white markings occasionally. The outer transverse line is in *strigilis* strongly bent inwards towards the inner margin, but is more straight in *latruncula*. In its upper part in *strigilis*, as a rule, on the outer side there are five distinct black streaks which in *latruncula* are very weakly developed or wholly wanting. In *latruncula* there stands almost always between the transverse line and the claviform a blacker streak-like spot, which unites with it to form a black bridge joining the two transverse lines. In *strigilis* this mark is absent or if present very obsolescent. The fact of both species having parallel series of similar variations emphasises the confusion."

Miana, Steph. (1829). Tutt, Gn., Barr., Splr. [*Oligia*, Hb. (1822) Hamps.: *Parastichtis*, Hb. (1822) Warr.-Seitz.: *Apamea*, Tr. (1816-25) Freyer, Tr.: *Hadena*, Schrnk. (1802) Meyr.] *strigilis*, L. (1758) and *latruncula*, Schiff. (1775).

Tutt's citing *strigilis* to Clerck was an error (*Brit. N.* p. 99). He quoted the description of *strigilis* from Linn. S.N. XIIed and did not refer to the prior works except Clerck's *Icones*. *Strigilis* was redescribed in the XIIed, S.N., from the *Fn. Suec.* p. 318. (1761). In *Sys. Nat.* (1758) p. 516 is the prior description, thus *strigilis* must be cited to L. and not to Clrk. In his descriptions subsequent to (1758) Linn. substituted "prior" for "fusca."

Strigilis, Linn. *Sys. N.* Xed. 516.

ORIG. DESCRIP.—"Alis deflexis nebulosis: denticulis setaceis intra fasciam albam terminalem." "Alae griseo-cinereae tribus annulis ovalibus nigris; facia alba alas terminans latior, intra quam area fusca inferit 5 vel 6 striae nigras fere ad ejus medium." The description of the type, and different from Clerck's description which is possibly that of a *latruncula* form.

Tutt does not place the *strigilis* of Linn. although he states it differs from that of Clerck, nor does he refer to the *strigilis* of Haw. According to Haw. himself he says that both his *praeduncula* and his *strigilis* are the same as the *strigilis*, Linn. of the *Fn. Suec.*, and that he hesitated whether he should unite the three slightly differing species (=forms) *praeduncula*, *strigilis* and *latruncula* into one species.

The descriptions of *strigilis*, Linn., *praeduncula*, Haw., and *strigilis*, Haw. are only very slight differences of the same form, and almost negligible for differentiation. *Strigilis*, Haw. is said to be a little

smaller than *praeduncula*, but scarcely differs except in the black connecting streak which is constant in all forms.

Tutt put Haw. as the authority for both *latruncula* and *praeduncula* whereas Schiff. *Verz.* p. 89 (1775) introduced both *latruncula* and *praeduncula* among their "Kleine Eulen" characterised by small size, having on the very dusky dependant forewings a transverse band which narrows inwardly and is narrowest on the inner margin, with a white waved little streak on its edge. On the abdomen stands a small single tuft. The *latruncula* has its narrow forewings brown varied with red: the *praeduncula* has its narrow forewings brown with white in the marginal area.

Tutt *Brit. Noct.* I. 99 (1891): Barrett *Lep. Br. Is.* V. 12, pl. 186 (1899): Stdgr. *Cat.* IIIed. 164 (1901): Splr. *Schm. Eur.* I. 181, pl. 41 (1905): South *Moths Br. Is.* I. 275, pl. 134, figs. 1, 4, 7, 10, 13, 16 (1907): Hamps. *Lep. Phal.* VII. 381, fig. 63 (1908): Culot *Noct. et. G.* I(1). 122, pl. 21, figs. 16-18 (1909-13).

Esper's figure, IV. pl. 146, 1, 2, 3? are bad portraits of *strigilis*; the figs. 4, 5, 6 Esper calls var. *aerata*. Werneburg calls the latter *strigilis* var. without comment.

Esper's figures 4, 5, 6 are quite distinct from one another, fig. 4 a very light brown form resembling *strigilis* without any white. Figs. 5, 6, both apparently "alis cupreo-micantibus" are more alike, while 5 has some of the marking clearly visible, fig. 6 has all but the outer waved line obsolescent, smooth shining brown. Freyer says that figs. 2 and 3 are more certainly *latruncula* than *strigilis*. Fig. 3 has the reddish coppery colour of *latruncula*.

Esp. *l.c.* re *aerata* pl. 146, figs. 4, 5, 6 in his *Text.* p. 469 calls fig. 6 *latruncula*.

Esper's fig. on pl. 162 called *latruncula* was corrected in the text p. 557 to *aerata*.

[It is noted in *Pap. d'Enr.* VIII. 38 that the description of Esper's fig. IV. pl. 146, (1786), had not been published in 1792.]

Ernst and Engramelle, *Pap. d'Eur.*, VIII. figs. 550-1, have 7 figures of *strigilis-latruncula*. In the text p. 38 the authors say that 551a, c are the *strigilis*, L. and they consider that the figures 550a, b, c, e, f, are so like *strigilis* in every respect but colour that they must be considered as varieties of it. Werneburg, *Beitr.* II. 123, says that 550a, b, c, are *latruncula*, Schiff. and that b. with whitish in the border is the form *rubeuncula*, H.-S.; 550e, f, are also *latruncula*, but e is an extraordinary figure, which may belong here as a rare form; and 551a, c, are *strigilis*, L. One would agree with this except that 550f, is *strigilis* rather than *latruncula*.

Borkhausen, IV., seems to have mixed up several species with *strigilis*, etc. Werneburg points out that on p. 174 his *latruncula* is *strigilis*, L. var. *latruncula*, Schiff.; on p. 175 his *praeduncula* is *fasciana*, L.; on p. 176 his *furuncula* is *latruncula*, Schiff. var.; on p. 187 his *meretricula* is *latruncula*, Schiff. var. (teste Bork. in *Rhein. Mag.* I); and on p. 188 his *versicolor* is *strigilis*, L.

Hübner has three figures, 94 *latruncula*, 95 *praeduncula*, and 776 *latruncula*. 94 and 776 have nothing in common as regards colour. In Hübner's *Text.* he alters *praeduncula* to *strigilis*, L., p. 183 and says that 94 *latruncula* is *aerata*, Esp. p. 184. To this latter Tutt agrees, but strangely does not refer to either of the other figures of

Hübner. Hübner's fig. 776 seems to be a small example of *aethiops*, Haw. [fig. 776 is Geyer's, after Hübner's death.]

Boisduval put *rubeuncula*, Ramb. as a form of *latruncula*, Ind. Meth. no. 901 (1840), but Donzel and Freyer both think it is a true species (Fr. N. Beitr. V. 143).

Wood. Ind. 274-6, has good figures of the same three.

Guenée recalls the fact that Freyer figures *strigilis* and *latruncula* with unlike larvae, but he (Guenée) states emphatically that he has observed no difference between the two and that Freyer's figures have not been verified in nature. Dr. Cockayne says (in lit.) "I agree with Guenée's statement. I can see no difference. If there be one it must be very slight indeed."

Like many continental lepidopterists Guenée puts *fasciuncula* as a form of the *strigilis-latruncula* complex. He recognises *praeduncula*, Schiff., etc., as *strigilis*.

Guenée points out that in *latruncula* the subterminal line is preceded by a ferruginous tint and also that in *aethiops* this tint is traceable.

Guenée describes *latruncula* "All individuals in which the grey-white of the subterminal space is replaced by grey-brownish. The subterminal is generally preceded by a ferruginous tint."

Werneberg, Beitr. I. 518, says "I accept the determination of Lederer that *latruncula*, Tr., is not specifically distinct from *strigilis*, L.; I have no hesitation in placing together *strigilis*, Fb., with *praeduncula*, W.V., which is certainly *latruncula*, Tr., the variety with more whitish mixed band."

Staudinger, Cat. IIIed. (1901), treated *latruncula* as an ab. of *strigilis*.

Spuler notes, Schm. Eur. I. 181, 1906, that Hormuzaki's *intermedia* is the dusky form of *latruncula* parallel to the *aethiops* of *strigilis*.

Rebel, Berge-Reb. (1909) treats *latruncula* as an ab. of *strigilis*, more reddish brown, the outer band pale brown (not white), mostly smaller but equally common.

Rebel says, Berge-Reb. (1909), p. 189, that *intermedia*, Hormuz., without the lighter area in the submarginal field, is identical with the *latruncula*, Haw., of Tutt's tabular scheme, Brit. Noct. I. 99. It would appear to be the var. β of Haw. named *unicolor* by Tutt.

Warr.-Seitz, l.c. pl. 40, gives eleven figures but not one of the typical *strigilis*, L. The nearest is that called *praeduncula*; *latruncula* is next, a brown form; *aerata*; *fasciata*, which agrees with Tutt's description; *suffumata*, an extreme form of the last; *virgata*; 2 of *aethiops*, one can be allotted to *latruncula* with just a shade of a brown outer marginal area, the other a *strigilis* form with a grey shade; *intermedia*, Hormuz.; *unicolor*; *terrea*, Warren.

Warr.-Seitz, Pal. Noct. III. (1911), treated *latruncula* as a form of *strigilis*, and *aerata* as an extreme form of *latruncula* with a more or less rufous tint, instead of the pale more or less luteous outer band.

Culot, Noct. et G. (1909-13) says on the authority of Stdgr. that *latruncula* is a local form of Sicily.

Culot, N. et G. I. pl. 21, has three figs. all very good, *strigilis*, a small one with only a few white markings, *latruncula* and a very small *aethiops*.

Barrett describes the Variation as follows—" Exceedingly variable the more typical form varies in the ground colour from greyish-white, through various shades of grey, grey-brown, whitish-brown, and pale reddish brown, even pale olive-brown, or tinted with fulvous, and has the described markings in various dark shades, varying with the ground colour, or becoming at times even dark purple-red.

" In other cases the ground colour assumes dark brown and dark red-brown shades, the white wholly obliterated, or the white crescent above the anal angle alone remaining; and the wings are then marbled with more monotonous tones of brown and red-brown, the central band is but little darker, or not so at all.

" But the most usual variation, and the most striking, which seems to accompany the type everywhere, except where it supersedes it, is deep black—wholly so—or else the thorax and ground colour of the forewings smoky black with a deep black central band; the stigmata often not visible.

" In all the forms the thorax follows in colour the darker portion of the forewings; and the hindwings are darker or paler in unison.

Barrett records a specimen " large, of the typical colouring, with the markings grey-black, and of so bright a colour as almost to appear blue."

The names and forms to be considered are:—

strigilis, L., *Sys. Nat.* Xed. 516 (1758).

strigilis, Clerck., *Icones*, pl. IX. 6 (1759).

latruncula, Schiff., *Verz.* 89 (1775). Warr.-Seitz, *Pal. Noct.* III., pl. 40i.

praeduncula, Schiff., *l.c.*; Warr.-Seitz, *l.c.*

aerata, Esp., *Schm. Abbild.* IV(2). 466, pl. 146, f. 4-6 (1786 etc.); Warr.-Seitz, *l.c.*

meretricula, Bork., *Naturg.* IV., 187 (1792).

versicolor, Bork., *l.c.*, 188 (1792).

praeduncula, Haw., *Lep. Brit.* 213 (1806-10).

latruncula, Haw., *l.c.* 214 (1806-10).

aethiops, Haw., *l.c.* 215 (1806-10); Warr.-Seitz, *l.c.*

suffuruncula, Frr., *N. Beitr.* V. 148, pl. 471 (1845).

?*rubeuncula*, Ramb. Donz., *Ann. Soc. ent Fr.* 430, pl. 12, 3-4 (1838).

invisa, Walk., *Cat. Noct. B.M.* X., 259 (1856).

ab. *virgata*, Tutt, *Brit. Noct.* I., 99 (1891); Warr.-Seitz, *l.c.*

ab. *nigro-rufa*, Tutt, *l.c.*

ab. *rufa*, Tutt, *l.c.*

ab. *unicolor*, Tutt, *l.c.*; Warr.-Seitz, *l.c.*

ab. *fasciata*, Tutt, *l.c.*; Warr.-Seitz, *l.c.*

ab. *anoena*, Krul., *Soc. Ent.* XXIII., 11 (1908).

ab. *intermedia*, Horm., ; Warr.-Seitz, *l.c.*

ab. *suffumata*, Warr.-Seitz, *Pal. Noct.* III., 172, pl. 40 k, i (1911).

ab. *tercea*, Warr.-Seitz, *l.c.*

ab. *fasciata*, Lenz., *Oesth. Sudbay.* II(2)., 269 (1927), pl. XIV. 19.

Tutt treats of *praeduncula* which is *strigilis*, L.; ashy grey ground with reddish grey outer fascia, *suffuruncula*; ditto with reddish median band, *virgata* (both *latruncula* forms); ground reddish-grey or -brown with whitish or whitish grey outer fascia, *strigilis*, Clk. (a *latruncula*

form); ditto with pale reddish outer fascia, *aerata* (a *latruncula* form); ditto unicolorous, *latrucula*, Haw.; ground blackish or reddish-brown with whitish outer fascia, *nigro-rufa* (a *strigilis* form); ditto with red outer fascia, *rufa*, (a *latruncula* form); ditto unicolorous, *unicolor* (a *latruncula* form); ground black with white outer fascia, *fasciata* (a *strigilis* form); ditto unicolorous, *aethiops* (a *strigilis* form deep black, a *latruncula* form a paler slightly brown black).

The allocation of these forms and names between the two species is a difficult matter and quite open to criticism. The attempt is below.

Miana strigilis, L. (1758).

praedumcula, Schiff. (1775): Haw. (1806-10).

versicolor, Bork. (1792).

ab. *aethiops*, Haw. (1806-10) very black form.

ab. *nigro-rufa*, Tutt (1891).

ab. *fasciata*, Tutt (1891).

r. *amoena*, Krul. (1908).

ab. *suffumata*, Warr.-Seitz (1911).

ab. *terrea*, Warr.-Seitz (1911).

ab. *fasciata*, Lenz. (1927) = *fasciata*, Tutt.

versicolor, Bork., *Naturg.* IV., 188 (1792).

ORIG. DESCRIP.—“This Noctua has the size and appearance of *strigilis*. The forewings have a reddish-brown ground colour which is mixed with blackish brown chequered with whitish markings. At the base there is a trace of a whitish transverse line, then follows a whiter transparent streak. Next following there are the usual stigmata of which the orbicular is first, the reniform beyond, both of these are white edged, and below the orbicular there is a small claviform stigma of similar character. Beyond these stigmata is a white transverse band, in which blackish hairlike projections extend from the ground. The fringes are chequered white and black. The costa is black spotted and towards the apex of the wing white dotted. The hindwings are brown-grey; darker scaled on the outer margin.”

This appears to be none other than the usual *strigilis*: Werneburg, *l.c.* is of this opinion. Bork. refers to Esper's pl. 146, fig. 3, labelled *strigilis* var.

ab. *amoena*, Krul., *Soc. Ent.* XXIII. 11 (1908).

ORIG. DESCRIP.—“The whitish colour in the marginal area of the forewings has a distinctly greenish tone.” Very scarce. Eastern Russia (Wiatka and Kasan).

ab. *terrea*, Warr.-Seitz, *Pal. Noct.* III. 172 (1911).

FIG.—*l.c.* pl. 40k.

ORIG. DESCRIP.—“A dull grey unicolorous form, with the lines, the outlines of stigmata, and the teeth of outer line finely black.” Tring.

ab. *suffumata*, Warr.-Seitz, *Pal. Noct.* III. 172 (1911).

FIG.—*l.c.* pl. 40i.

ORIG. DESCRIP.—“Has the white areas of *fasciata*, Tutt, still farther reduced.”

ab. *fasciata*, Lenz., *Osth. Schm. Sudbay.* II. (2), 269 (1927).

FIG.—*l.c.* plt. XIV. 19.

ORIG. DESCRIP.—“Suffused to the white marginal area.”

[*Miana strigilis*, Clrk. (1759).]?

latruncula, Schiff. (1775).

aerata, Esp. (1786).

meretricula, Bork. (1792).

ab. *aethiops*, Haw. (1806-10), paler form.

latruncula, Haw. (1806-10), var. *a.*

ab. *suffuruncula*, Tr. (1816-25).

ab. *rubeuncula*, Ramb. (1838).

r. *inrisa*, Walk. (1856).

ab. *virgata*, Tutt (1891).

ab. *unicolor*, Tutt (1891), = *latruncula*, Haw. var. *β.*

ab. *rufa*, Tutt (1891).

ab. *intermedia*, Hormuz., teste Splr.

meretricula, Bork., *Naturg.* IV. 187 (1792).

ORIG. DESCRIP.—“It is somewhat smaller than *strigilis*. which it resembles in shape and also much in marking. The ground colour of the forewing is brown and somewhat suffused with red-yellow scaling. The usual spots (stigmata) are yellow with brownish centres. Before these are a few yellowish wavy lines, and beyond them a yellow somewhat obsolete band, in which five or six black streaks run over into the brown area to the middle. Inside the fringes lies a yellow line; and the fringes are yellowish and black spotted. The hindwings are ashy-grey with yellow margin.” This seems to indicate a *latruncula* form.

Werneburg, *Beitr.* II. 171, says this is *latruncula* and notes that Bork. himself in the *Rhien. Mag.* subsequently explained that this was a variety of *latruncula*.

ab. *suffuruncula*, Treit. *Schm. Eur.* V(2). 97 (1816-25).

Tutt gave Freyer plt. 471 as the original of *suffuruncula*. This is not so as Freyer gives a reference to Treit.

FIGS.—Freyer. *Nen. Beitr.* II. plt. 142, 471. Freyer says his first figure was from a not quite fresh example.

ORIG. DESCRIP.—“The forewings have three distinct areas, of which the first near the base and particularly the third are wide. These two are a shiny and near the second area a more silvery, and towards the base and fringes of a more coppery suffusion. The first area extends to the orbicular. A black streak lies towards the costa which ends at the orbicular. Then follows the stigma itself, and a longish, black streak, emphasised with silver and coppery colour. Under it lies a strong black square in place of the claviform. Beyond the orbicular and claviform the third area begins which contains the reniform which is wholly filled with silvery powdering. The waved line contains fine black dots and is coppery coloured. The fringes are dark brown and double edged.” Vienna (Frr.).

rubeuncula, Ramb., *Ann. Fr.* (1838), 430-1.

FIG.—*l.c.* plt. XII. f. 3-4.

ORIG. DESCRIP.—“ Like *latruncula* but smaller. It is a brick-red, while that is black brown. The forewings have a brick-red ground lighter transverse sinuous wavy lines. The most notable is the third, which, before reaching the inner margin, takes the form of a white crescent of which the points are turned to the outer margin. On the inside of this is seen a squared space of a red brown; the stigmata are scarcely apparent; they are paler than the ground upon which they rest; the fringe is pale reddish streaked with brown.

“ The hindwings are blackish with the fringes of a reddish white.”
Pyrénées Orientales.

The inner half length of the 2nd line is well marked by white in the figure.

I note that Bdv. and Dup., attributes *rubemcula* to Donzel and not to Rambur [*Ind. Meth.* no. 901 (1840) and *Cat.* 126 (1844)]

Guenée describes *aethiops*. “ The brown colour has become blackish and has invaded almost the entire wings: the subterminal space remains, however, just a little lighter, with a trace of a little ferruginous before the subterminal line. The other lines are almost entirely lost in the colour of the ground.” Hb.-Gey. 776. Haworth's var. *a*. “ totus niger ” would be the ab. *aethiops* of *strigilis*.

race *invisa*, Walk. X. 259 (1856).

ORIG. DESCRIP.—“ Pallide fusca: thorax fasciis obscurioribus cristaque postica nigricante; abdomen cinereum, cristatum; alae anticae gutta basali nigricante, lineis transversis undulatis pallidis fusco marginatis, fascia cervina exterioré punctisque marginalibus obscure fuscis; posticae cinereae, ciliis testaceis interlineatis.”

“ Pale brown. Thorax with darker bands, and with a blackish hind crest. Abdomen cinereous, crested. Forewings with a blackish discal dot near the base, with transverse undulating pale dark brown bordered lines, with a fawn coloured exterior band and with dark brown marginal points. Hind wings cinereous, with testaceous interlined ciliae.” Turkestan.

Miana, Steph. (1829) Stdgr., Tutt, Barrett, Splr., South. [*Hadena*, Schrnk. (1802) Meyr., H.-S.,: *Oligia*, Hb. (1822) Hamp. Warr.-Stz.: *Apamea*, Ochs. (1816-25)] *fasciuncula*, Haw. (1806-10).

This species has been so confused on the continent with *strigilis-latruncula* that it is difficult to trace its history. Speyer, however, *Stett. e. Zt.* 126 (1867), with English examples before him considers that the British judgment is correct, less on account of the differences of colour and marking than in the shape of the wings, the straighter costa, less concave beyond the middle, the apex more produced and sharper, the border area, the narrowness of the median area on the inner margin, etc. H.-S. even put *fasciuncula* as a var. of *latruncula*.

Tutt remarked in 1891 that “ This species (*fasciuncula*) which is generally treated as a variety of *M. strigilis* by the Continental authors,* is so exactly like that species in shape and markings, that, besides

* Stdgr. *Cat.* IIed. (1871) treated *fasciuncula* as a species.

colour there appears to be no distinguishing mark in the imago state by which it can be separated." [Brit. Noct. I. 102.]

Pierce in *Genitalia of the Noctuidae*, p. 33, figs. on pl. XIII., gives the following definite differences:—

Strigilis. (1) LOBE of the anal angle of the cucullus thickly clothed with spines. (2) CLAVUS peaked, bulbed at the base, and clothed with short hairs. (3) UNCUS narrow waist, diamond pointed. (4) JUXTA without side spines. (5) AMPULLA rounded.

Fasciuncula. (1) LOBE of the anal angle of the cucullus thinly clothed with spines. (2) CLAVUS peaked and clothed with short hair. (3) UNCUS broad without waist and pointed. (4) JUXTA two arms surmounted with a bunch of spines on each. (5) AMPULLA stout and rounded.

These differences are well shown on the plate.

In addition the terminal portion of the valve is produced in a "bird's head" in profile but the beak portion is still longer than in *strigilis*, and quite distinctive (teste Dr. Cockayne *in lit.*).

Tutt *Brit. Noct. I.* 101 (1891): Barr. *Lep. Brit. Is. V.* 15, pl. 186 (1899): Stdgr. *Cat. III* ed. 165 (1901): Splr. *Schm. Eur. I.* 181, pl. 41 (1905): South *Moths. B. I. I.* 275, pl. 134 (1907): Hamp. *Lep. Phal. VII.* 377 (1908): Warr.-Seitz. *Pal. Noct. III.* 172, pl. 40k (1911): Culot *Noct. et. G. I*(1). 122, pl. XXII. 1-2 (1909-13).

Figure 550b of Ernst. and Engram. *Pap. d'Eur. VII.* (1792) is that of a *fasciuncula* form possibly Donzel's *rubeuncula*.

Hubner's *erraticula* 537 does not belong here. The central fascia unites it undoubtedly with *bicoloria*. There are no traces of the white characters on the inner margin. Warr. in Seitz place it to *bicoloria*.

Wood, *Ind.* pl. 13, figs. 279-280, figures two forms, the former named *rufuncula*, reniform red not so red as the typical and with the fascia "Plain red minor," only showing on inner margin and the latter a typical form. The fig. 279 of Wood is a *fasciuncula* form undoubtedly and not the *rufuncula* of Haw. and Steph. Haworth's description of "strigis duabus rectis medio" undoubtedly refers to *bicoloria*. Fig. 279 has the med. fascia identical with that of the normal fasc. albeit somewhat wider on the inner margin.

H.-S's. figures are all three much like *erraticula* of Rambur but of normal size; all are characterised by the central area (fascia) being darker on the inner margin and contracted to half its width above and bordered there by a conspicuous curve of white.

Spuler's figure is a very red-brown colour, pl. 40, f. 8.

Warr.-Seitz, *l.c.* pl. 40k figures the grey and the red forms.

Culot, *l.c.* I(1). pl. 22 figures a typical form with an intermediate without very suppressed red colouring.

Guenée treats *erraticula*, Hb. nec Fr., as a species and states the essential characteristics as a ground colour of grey-violet, with the narrow median area of a decided black.

He describes a form of it (A) much mixed with reddish, the median area being of an agatha red. Thorax of a decided red with the black line of the collar very feeble.

Of the Variation Barrett says—"There is a constantly recurrent variety of the male, often common, which bears a far greater resem-

blance to the female—of a pale brownish-drab or yellow-brown, clouded with dull umbreous, and having the central band of a very soft umbreous, the markings normal except that the white edges to the transverse lines are less distinct, and the stigmata sometimes dusky white. Intermediates occur much more rarely. In all the colour of the thorax follows that of the central band of the forewings. In the North of Ireland and in Scotland the red forms are sometimes brighter red and the drab-brown rather darker, while some take a smoky tinge.”

Barrett records a specimen having “the central band of a rich purple-red, with shading of the same on both base and apex of the wings.”

He also records a specimen “Entirely suffused with golden-yellow, through which the darker markings are perceptible.”

The names and forms to be considered are—

fasciuncula, Haw. *Lep. Brit.* 215-16 (1806-10).

ab. *rubeuncula*, Donz. *Ann. Soc. ent. Fr.* 430. pl. XII. 3-4 (1838).

ab. *erratricula*, Rambr. *Cat. Sys. Lep. And.* pl. XVI. 1-2 (1858).

ab. *cana*, Stdgr. *Cat. Hed.* 102 (1871) [*Haw. Lep. Brit.* 216 (1806-10)].

ab. *pallida*, Tutt *Brit. Noct.* I. 101.

ab. *extrema*, Tutt *l.c.*

ab. *suffusa*, Tutt *l.c.*

ab. *brunneata*, Warr.-Seitz. *Pal. Noct.* III. 172. pl. 40k (1911) [*Hamp. Lep. Phal.* VII. 377 (1908)].

ab. *grandis*, n. ab.

Tutt dealt with (1) *fasciuncula* typical; (2) *rubeuncula*, Frr. (not of Donz.) almost unicolorous, less red, band not developed; (3) *cana*, Stdgr. Haworth's var. B. the ground pale, with distinct fascia (red or dark fuscous); (4) *pallida* pale all over, fascia only on inner margin; (5) (*pallida*) *extrema* pale, entire absence of fascia; (6) *suffusa* dark greyish black with obsolescence of markings.

Tutt gives ab. *rubeuncula* as of Freyer (1845) whereas it should have been of Donzel (1838) as Freyer states. Tutt's description of the figure is wrong from my copy of Freyer. The figure is not “almost unicolorous.” The usual markings of *fasciuncula* are quite apparent and the arrangement of markings well defined.

Freyer, *N. Beitr.*, V. 143 (1845), considers this, as did Donzel, a true species, whereas Bdv., *Ind. Meth.* (1840), placed it as a form of *latruncula*. No doubt this last opinion was in accord with the generally received continental view that *fasciuncula* was a form of *strigilis*.

H.-S. treats *rubeuncula* as a species only separable from *latruncula* with difficulty by the outer transverse line being cut through or not by the black veins, the appearance of the stigmata as lighter spots without sharp dark margins, the colour either clear cinnamon red (both sexes) or pale ochre-yellow at the base, in area 2 and beyond the elbowed line most red.

Warr.-Seitz. gives *rubeuncula*, Donz. and *erratricula*, Hb. and *suffuruncula*, Tr. as synonyms of *literosa*.

ab. *rubeuncula*, Donz. *Ann. Soc. ent. France*. VII. p. 429 (1838).

FIG.—*l.c.* plt. 12.

ORIG. DESCRIP.—“It has the appearance of *latruncula*, but is smaller. It is of a brick red, while that is a blackish brown. The fore-wings are a brick red ground with the sinuous transverse lines lighter. The most notable is the third, which before reaching the inner margin takes the form of a white crescent of which the points are directed to the outer margin. Within this crescent one sees a small square space of a red brown. The stigmata are obsolescent; they are paler than the ground on which they stand. The fringe is pale reddish cut into by brown. The lower-wings are blackish with the fringes of a reddish-white. The female is of a paler tint, tending to soiled yellow; the lines are better indicated. Some males are the colour of the females.”
Mont-Louis. Pyrenées Orientales.

ab. *grandis*, n. ab.

FIG.—Ramb. *l.c.*, plt. XVI. 1-2 (*erraticula*, Hb. ? error).

ORIG. DESCRIP.—No letterpress.

Ramber, *Cat. Sys. Lep. And.* plt. XVI. f. 1-2 (1858) figures an insect under the name *erraticula*, Hb. ? A careful comparison of the figures show complete dissimilarity. There is no letterpress.

Hübner's fig. 437, *erraticula* is certainly a bad figure to represent any form of *fasciuncula* with which I am acquainted. It is smaller than Rambur's figure and the markings are not comparable, all being more or less regularly transverse and the general colour is not the beautiful red of *fasciuncula*, of which Rambur's figure certainly partakes. Warr.-Seitz. places it to *liverosa* and I think rightly so, and Rambur's figures they place to *fasciuncula*.

In this case Rambur's fig. is without a name and as it is nearly twice the size of typical *fasciuncula* it might be called *grandis*.

ab. *brunneata*, Warr.-Seitz. *Pal. Noct.* III. 172 (1911) [*Hamp. Lep. Phal.* VII. 378 (1908)].

ORIG. DESCRIP.—Hamp. Ab. 1. “Darker brown,” Scotland.

Warr.-Seitz. “Scotch form browner, especially the lower half of median area.”

ab. (ssp.) *albiluna*, Kozhants. *Jahr. Martian. Minussinsk.* VI. 76 (1929).

ORIG. DESCRIP.—“This was placed to the species *Oligia leuconephra*, Hamp. The determination of it as that species arose from an error since *leuconephra* does not belong to the genus *Oligia*. But the species which we included under the name *leuconephra* is a true *Oligia* which obviously possessed the habitus and the marking of *O. fasciuncula*. The distinction from the typical form consists only in the golden reflection from the brown forewings and the clear white half moon-shaped spot in place of the indefinite reniform stigma.”

Miana, Steph. (1829) Gn. New. Barrett, Stdgr. Splr. Cul. [*Hadena*, Schrnk. (1802), Meyr. : *Apamea*, Tr. (1816-25). Bdv. : *Oligia*, Hb. (1822) Hamp., Warr.-S.] *bicoloria*, Vill. (1789) = *furuncula*, Schiff. (1775).

Tutt took Villars's name for this species viz. *bicoloria*, Linn. *Entomologia*, II. 288 (1789), which name Bork. used *Schn.* IV. 190 (1792). Treit. *Schn. Eur.* V(2). 94 (1825), discusses the name and points out the agreement of Hübner's fig. 545, the specimens in Schiffermüller's collection, and the German description in the *Verz.*, p. 89, 1775, that *furuncula* is the prior name for *bicoloria*, Vill.

Hüb. *Text-Noct.*, 184 (1805-18) gives *bicoloria*, Bork. and *meretricula*, Bork. as synonyms of *furuncula*, Schiff.

Villars gives a reference for *bicoloria* to "*Entomologia Parisiensis*, 194," which I have failed to trace. It would appear to refer to Fourcroy or to Geoffroy, but I fail to find the name in either of these books.

furuncula, Schiff. *Verz.* 89 (1775).

ORIG. DESCRIP.—"Small Noctua, has a transverse band on the dependent very dusky forewings, which narrows inwards, is least on the inner margin and is margined with a white wavy contour line. There stands a few tufts of hair on the body. Braune Weissstreifigte Eule." It is classified with *latruncula*, *praedumena* (*strigilis*), etc.

There seems great uncertainty among earlier authors what is the colour and marking of the earliest named form, *i.e.*, of *furuncula*, Schiff. If we may depend on the remarks of Treit., *l.c.*, 94, this fig. 545 is of the typical form, which Hb. describes, *Text* p. 184, as "reddish brown, the outer half of the wings pale in colour, with whitish reniform and wavy line, the body and abdomen grey. Syn, *furuncula*, Treit., *bicoloria*, Bork. and *meretricula*, Bork."

Tutt *Brit. Noct.* I. 103 (1891) : Barrett *Lep. Br. Is.* V. 20, plt. 187 (1899) : Stdgr. *Cat.* IIIed., 165 (1901) : Splr. *Schn. Eur.* I. 181, plt. 41 (1905) : South *M. Br. Is.* I. 277, plt. 134 (1907) : Hamp. *Lep. Phal.* VII. 393 (1908) : Warr.-Seitz. *Pal. Lep. Noct.* III. 173, plt. 41 (1911) : Culot *N. et G.* I(1). 122, plt. 22 (1909-13).

Esper's fig. *aeiata* plt. 146, 5, which is sometimes referred to this species is undoubtedly a *strigilis* form.

The figures of Ernst. and Engr. *Pap. d'Eur.* VIII. are very mixed and difficult to elucidate. Werneburg says 548*a* small and light clay yellow *furuncula* ; 548*b-e*, he also calls *furuncula*. Probably correctly except that *b* is exceptionally large for this species, 549*a-c* he calls *furuncula*. I would only call *a* this species. 550*f* he calls *strigilis*, but I should certainly agree with Guenée and call it *furuncula*.

Hübner's *Noct.* 96 (1808) shows the characteristic transverse line of *vinctuncula* very clearly. 545 (1808-18) has a uniform strongly dark mahogany brown base with ochreous brown ground. Tutt calls this the typical figure of *furuncula*, and thus does not agree with Gn. who gives Ernst. and Engr. fig. 550*f* which has no shade of reddish or brown in it. Hübner's fig. therefore does not represent the *bicoloria* as described by Villars. But Borkhausen IV. 190, however, describes the

basal half as either brighter or darker red-brown. Hence Gn. has not indicated the typical *furuncula* but the *bicoloria* form. Goetze calls it the "white streaked brown." *Ent. Beitr.* III(3). 222.

Dup. *Hist. Nat.* VI. pl. CI. f. 3 is of a very dark form of two main shades of dark reddish-grey, the basal half being of a deep brown (VII. 1).

Wood. *Index.* figs. 277 and 278 pl. 13, are *humeralis* and *terminalis*. He does not figure the very light form with which one is so familiar on the sea coast, sandhills, etc. His figure 279 labelled *rufuncula* is not this species but a *fasciuncula* form.

South. *M. Br. Is.* I. pl. 134. gives five figures not one of which is typical *furuncula* as depicted by Hb. Fig. 3, is probably the *bicoloria*, Villars, ground colour greyish fuscous with outer half paler than basal half.

Warr.-Seitz figures *bicoloria*, Vill. pl. 401, *furuncula*, Hb. pl. 401, *rufuncula*, Haw. 2 figs. 401, *terminalis*, Haw. pl. 401, *vinctuncula*, Hb. pl. 41a, *unicolor*, Warr.-S. pl. 41a, *pallidior*, Stdgr. pl. 401, *reticulata*, Tutt. pl. 401, *brunneo-reticulata*, Tutt. pl. 401, *longistriata*, Warr. S. pl. 401. Yet none of the really pale forms are figured, all are what I should call dominantly dark.

Culot figures, *l.c.* pl. XXII. f.3. *bicoloria*; f.4. *furuncula*; f.5. *insulicola*; and f.6. *vinctuncula*; as usual all are quite excellent figures.

Of the Variation Barrett says.—"A form which instead of having the colours of the forewings equally divided [as in typically marked forms] has them completely marbled with some shade of brown or reddish-brown, is in many districts even more plentiful, and in this the perpendicular line is usually obliterated. Intermediate forms retaining the division, but having the outer portion almost any shade of brown paler than the inner are not infrequent."

"In some parts of the South Coast and especially in the Isle of Wight, the brown of the basal half is invaded with white, so as in some instances to leave a darker central band and even to furnish its lower half with a dark brown or black bar, while in others the orbicular stigma and an oblique blotch below it become white; in all these the white outside the perpendicular line has a chalky tint. In these localities the female in some instances has similarly divided colouring.

"In Berkshire and elsewhere inland the basal half is not seldom of a rich purple-red or purple-brown, and the hind marginal cloud similar or darker."

Barrett records a form in great abundance from some parts of the Irish coast, "having the forewings unicolorous yellowish-drab, varying but little darker or paler." "This form stands broadly out from the rest, but language altogether fails to express the intermingling of all these variations."

Barrett adds "Various names have been given to these forms, in the first place under the impression that they formed distinct species, more recently as varieties:—from our great knowledge of the intermediates, these have lost all definite meaning and seem to be of little value."

The Names and Forms to be considered are:—
furuncula, Schiff. *Verz.* 89 (1775).
f. *bicoloria*, Vill. *Linn. Ent.* 288 (1789).

- ab. *terminalis*, Haw. *Lep. Brit.* 215 (1806-10).
 ab. *rufuncula*, Haw. *l.c.*
 ab. *humeralis*, Haw. *l.c.* var. γ .
 ab. *vinctuncula*, Hb., *Noct.* 96 (1802).
furuncula, Hb., *l.c.* 545 (1808-18) = *furuncula*, Schiff.
furuncula, Tr., *Schm.* V(2). 52 (1816-25).
 ab. *pulmonariae*, Dup., *Hist. Nat.* VI. 47 (1826) pl. 75.
erratricula, Freyer, *Neu. Beitr.* II. 81, pl. 142, 3 (1836).
furuncula, H.-S., *Neu. Schm.* p. 4, figs. 19, 22, 23 (1856) = *insulicola*,

Stdgr.

- subsp. *insulicola*, Stdgr., *Cat.* IIed. 103 (1871).
 subsp. *pallidior*, Stdgr. *Stett. e. Zt.* XLIII. 42 (1882).
 ab. *pallida*, Tutt, *Brit. N. I.* 105 (1891).
 ab. *albicans*, Tutt, *l.c.*
 ab. *reticulata*, Tutt, *l.c.*
 ab. *fusca-reticulata*, Tutt, *l.c.*
 ab. *brunnea-reticulata*, Tutt *l.c.*
 ab. *rufa-reticulata*, Tutt *l.c.*
 ab. *grisea-reticulata*, Tutt *l.c.*
 ab. *semicretacea*, Alph. *Mem. Rom.* IX. 29 (1897).
 ab. *albimacula*, Splr. *Schm. Eur.* I. 181. pl. 41 (1905).
 ab. *unicolor*, Warr.-Seitz. *Pal. Noct.* III. 173. pl. 41a (1911).
 ab. *longistriata*, Warr.-Seitz. *l.c.*

Tutt dealt with *pallida*, whitish grey of two shades, the basal half slightly darker: subsp. *insulica* the mottled whitish grey form; the unicolorous whitish grey, *albicans*; *bicoloria* the grey fuscous with outer half paler = *humeralis*, Haw.; *reticulata*, the mottled fuscous grey with distinct markings; *humeralis*, var. γ , Haw., the unicolorous fuscous grey; the reddish-or ochreous-brown form, *furuncula*, Hb. (Haw. ?); the mottled ochreous- or reddish-brown, *brunnea-reticulata*; the unicolorous ochreous- or reddish-brown, *terminalis*, Haw. *a* and *b*.; pale reddish ochreous with outer half pale reddish grey, *pulmonariae*; the mottled pale reddish ochreous, *rufa-reticulata*; the unicolorous pale reddish-ochreous, *rufuncula*, Haw.; *vinctuncula*, the narrow banded (black) form; and in the Appendix Vol. IV. *pallidior*, a paler form with basal half rufous, terminal half whitish, hindwings white. He also refers to *fusca-reticulata* and *grisea-reticulata*, neither of which he otherwise mentions. Probably the former refers to *reticulata* above and the latter *insulicola* above.

Haworth evidently did not consider his *rufuncula* related closely to his *humeralis* and *terminalis* as he separated them by his *fasciuncula*, and if Wood's fig. 279 of *rufuncula* be correct it certainly is not a form of *furuncula* as the outer limit of the fascia of *fasciuncula* form, outside the reniform, is double curved and not straight. The colour also is the red of the latter and not the red with pubescent white surface of the former. Stephens only had one poor example.

Freyer, *Neu Beitr.* II. p. 81. pl. 142. 3 (1836) *erratricula* does not belong here nor is it the *erratricula*, Hb. It has been put here by some authors.

Guenée considers the typical form to be the bipartite brown and white form, as figured in Ernst and Engr. VIII. fig. 550 f. This figure

is too large and also too clearly and brightly marked and has a much better appearance for *strigilis*. Werneburg considers it to be *strigilis*. Guenée says:—typical form: half brown, half white, (*i.e. bicoloria* form).

terminalis, A: white half replaced (=548 d. e.) with division line still distinct by a. brown, b. reddish.

rufuncula, B: whole wing uniform tint, one sees only the division line, the basal line and black traces in the terminal space.

vinctuncula, A: whole wing uniform tint, line very pronounced black.

pulmonariae, C: ground yellow-ochre, stigmata clear, obsolescent central line = Engr. 548a b.

pulmonariae, D: grey black, extra basal area brown mixed with yellow to base.

Stdgr. *Cat. IIed.*, 103, gives var. et ab. *insulicola* with reference to H.-S. *Neu Schm.* 4, figs. 19, 22, 23, (al. ant., griseis, albido, nigroque, strigulosis) thus naming the form of *furuncula* figured by H.-S.

Newman, *Brit. Moths*, 309 (1869) points out that Haworth's *humeralis*, *terminalis*, and *rufuncula* are the 3 chief forms of *furuncula*, and he (Newman) figures all three rather crudely.

Tutt quotes Stdgr. (IIed.) for the typical form "ab. ant. usque ad medium fuscis." (iisque is a printer's error, *B. N. I.* p. 103) as describing the typical form. In IIIed. Stdgr. adds "deinde albicantibus."

Tutt says 4 ground colours, white, fuscous grey, pale reddish, dark reddish, and of each. (1) unicolorous (2) mottled with transverse whitish lines (3) basal half dark, outer pale grey or white. a. unicolorous base. b. mottled base.

Stdgr., *Cat. IIIed.* 165, lists *semicretacea*, Alph. as his *pallidior* (dilutior, al. ant. dimidio basali rufescenti, dimid. exter. subalbido, al. post. sordide albidis).

He lists the *rufuncula*, Gn. as the *vinctuncula*, Hb. (ut *rufuncula* sed al. ant. fasci media tenui nigra; ab. rarissima).

He says that the *furuncula*, H.-S. *Neu Schm.* is the same as his *insulicola* (alis ant. griseis, albido nigroque strigulosis).

He says that the *erraticula*, Frr. is the same as the *rufuncula*, Haw. (alis ant. fere unicoloribus rufescenti-griseis) see ante.

He lists *terminalis*, Haw. as the *furuncula*, Hb. 545.

He omits all reference to the *pulmonariae*, Dup.

Splr. takes *bicoloria*, Vill. as the type, where the basal half of the forewing is brown and the outer-marginal half whitish. If the base be very pale it is ab. *pallida*. If the outer half is reddish or brownish, it is ab. *furuncula*. When the forewings are unicolorous red-grey it is ab. *rufuncula*, and with white reniform is ab. *albimacula*. If similarly coloured with narrower black brown transverse bands it is the rare form ab. *vinctuncula*. The var. (race) *insulicola* has greyish forewings, which are marked by whitish and brown-grey, and come from Helgoland. In sandy steppe-like areas occurs *rufuncula*, with reddish base, lighter and whiter marginal half of forewing and dusky whitish hindwings, which form is paler further east as var. *pallidior* (*Schm. Eur.*, I. 181-2).

Hamp., *l.c.*, adopts *furuncula*, Schiff., he treats *erraticula*, Frr. (nec. Hb.) as synonymous as well as *suffuruncula*, Bdv., *Ind.* 116.

Warr.-Seitz uses *bicoloria*, Vill., and states that "typical *bicoloria*

has the outer area whitish or grey with a rufous tinge." Of *furuncula*, Hb., he says, "the outer half is reddish-brown approaching the colour of the basal half," with which his fig. pl. 401, somewhat agrees, but does not agree with Hübner's fig. 545, which is remarkably rich in colour.

He puts *humeralis*, Haw., as a syn. of *bicoloria*; *rufuncula*, Haw. is the *erraticula* of Freyer, nec. Hb.; *insulicola*, Stdgr. is *furuncula*, H.-S. (nec. Hb.).

Dup. *Hist. Nat.* VI. 47, pl. 75, f. 3, has described and figured his form *pulmonariae*, in proximity with *Caradrina* in which he followed Ochs.-Treit. *Gn. Noct.* V. 217, draws attention to the yellow-ochreous ground and the very slight separation into the two shade areas of the usual forms. He says that fig. 548 *a, b*, Engram. is the same, but the colours of this insect in my copy of the latter work are much too bright and *b* has the separation very well defined.

subsp. *insulicola*, Stdgr. *Cat. Hed.* 103 (1871).

H.-S. *Neu Schmett.* p. 4, 1856, writes the following note concerning figs. 19, 22, 23 on his plate.

"I consider there is almost a specific difference from *A. furuncula*; it appears somewhat more slender, the colour not so reddish, but brownish yellow, the reniform more distinct, smaller, and whiter.

"One example as pale as fig. 23 has the basal half of the forewing and the marginal area beyond the waved line as dark as typical *furuncula*."

From the Island of Norderney, in numbers, where no ordinary *furuncula* occur.

These three figs. 19, 22, 23 may be described—

19 has a darker ground, more dark ochraceous, but the markings are quite distinct.

22 is very uniform grey, with suppressed markings just visible, the most apparent being the submarginal.

23 has the upper $\frac{2}{3}$ of the f.w. very whitish and also a thin whitish inner margin. A darker chevron before the apex. The remaining $\frac{1}{3}$ being darker still, forming a long wedge from submarginal near inner angle to the base in a blunt point.

Culot, *N. et. G.* I(1). 123 remarks, "The example which has served me as a copy was furnished by Stdgr. to the old collection of Pictet, forming now a part of the Museum of Geneva; thus one may assume that the determination is correct." However, there seems to me but little agreement with Stdgr's description, which reads thus, *Alis ant. griseis albido nigroque strigulosis*. In my opinion it belongs to the ab. *rufuncula*, Hw.

subsp. *semicretacea*, Alph., *Mem. Rom.* IX. 29 (1897).

ORIG. DESCRIP.—"Var. major, pagina postica anticarum albidiore. ♂ = 26mm. A single ♂ larger than the European type, with the exterior half of the forewings whiter, appears sufficient to me to form a characteristic geographical race of *bicoloria*, Vill." Cent. Asia near Moudjik.

ab. *albimacula*, Splr., *Schm. Eur.* I. 181 (1905).

ORIG. DESCRIP.—"When the unicolorous red-grey form has a white reniform it is ab. *albimacula*."

ab. *unicolor*, Warr.-Seitz, *Pal. Noct.* III. 173 (1911).

FIG.—*l.c.* pl. 41a.

ORIG. DESCRIPT.—“Differs from *vinctuncula*, Hb. in being unicolorous fawn brown with a slightly darker band instead of the black band.”

ab. *longistriata*, Warr.-Seitz *Pal. Noct.* III. 173 (1911).

FIG.—*l.c.* pl. 40l.

ORIG. DESCRIPT.—“In which a straight black streak runs along the submedian fold from base to termen; the ground colour is pale grey, suffused with rufous-brown except at base of costa and beyond the pale grey reniform stigma, the terminal area being paler rufous-brown; hindwings grey.” Bilbao, Spain.

ADDENDA.

var. *reisseri*, Schawerda, *Zeit. Oestr. Ent. Ver.* XVII. 13 (1932).

FIGS.—Plt. III. 5, 6.

ORIG. DESCRIPT.—“The ground colour of the forewings is grey-brown. The central area is dark brown, in the small examples almost black brown. The central area is margined both on the outside and inside by a white double line. The outer white double line is conspicuously scalloped on the inner margin in both specimens bow-formed. The orbicular is clearly visible, with light margin. The reniform large, distinctly white, and since it reaches a white larger costal marginal spot, appears conspicuously larger and whiter. Three very small white spots on the costa towards the apex. An indistinct whitish premarginal transverse line. Blackish marginal lunules. Light and dark chequered fringes on the forewing. The outer area between the light curved lines and the outer margin darker. In and near the white of the marking a lighter variegated tone. In the larger ♂ there is a darker cell space on the hindwing very clearly defined. Thorax the colour of the forewing, along the abdomen more dark grey than the hindwing and the unicolorous underside.” High Mountains of Corsica. Nearest to ab. *reticulata*, Tutt, and ab. *brunneo-reticulata*, Tutt.

ab *minor*, Cabeau, *Lamb.* XXXII. 82 (1932).

ORIG. DESCRIPT.—“Very small, 17mm., but in coloration as in ab. *bicoloria*, Vill. Framières.”

ab. *minuscula*, Cabeau, *l.c.*

ORIG. DESCRIPT.—“Small as in ab. *minor*, but the coloration of ab. *rufuncula*, Haw. Framières.”

Miana, Steph. (1829), Gn., Barr., Stdgr., Splr., Cul. [*Hadena*, Schrnk. (1802) Meyr.: *Apamea*, Ochs. (1816-25) Fr.: *Oligia*, Hb. (1822) Warr.-S., Hamp.] *literosa*, Haw. (1809).

Gn. *Noct.* V. 216, like many continental authors, says that *literosa* is the *erraticula*, Hb., but not of Freyer. His var. A “Of a rosy-grey, much suffused with reddish” may represent *literosa*. Warr.-Seitz gives this latter varietal status under the name *subrosea*. Hamp. *Lep. Phal.* VII. 389, treats *erraticula*, Hb. as synonymous.

Although Tutt does not refer to *erratricula*, Hb. under *bicoloria* = *furuncula*, under *literosa* he expresses the opinion that *erratricula* is a form of *bicoloria*, although on the continent *literosa* has always been included with it. I am in agreement with Tutt here for all the *literosa* I have seen and all those recorded have a peculiar rosy coloration which is unmistakable.

Reference to the figures of the genitalia of *literosa* and *furuncula* in Pierce *Gen. Noct.* pl. XIII. is quite convincing as to their specific distinctness. The text *l.c.*, p. 32, 33 is rather meagre and not sufficiently comparative.

Tutt, *Brit. Noct.* I. 106 (1891): *Barr. Lep. Br. Is.* V. 8, pl. 185, 2 (1899): *Stdgr. Cat.* III ed. 164 (1901): *Splr. Schm. Eur.* I., 180, pl. 41 (1905): *South Moths Br. Is.* I. 276, pl. 134 (1907): *Hamp. Lep. Phal.* VII. 389 (1908): *Warr.-S. Pal. Noct.* III. 172, pl. 40k (1911): *Culot N. and G.* I(1). 121, pl. 21, f. 15 (1909-13).

Stephens has a good figure but somewhat larger than average examples. *Ill.* III. pl. 25, fig. 1 (1829).

Warr.-Seitz includes the *erratricula* of Hb. and the *suffuruncula*, Tr. as synonyms.

He figures ♂ and ♀, typical markings but the rosy flush practically suppressed; *constricta*; *subarcta* with no red tints; *subrosea*, the whole forewing suffused rosy brown; and *onychina*, reduction of dark tints, the whole forewing creamy grey, a striking ab. Ab. *subrosea* is var. A of Guenée.

Culot *N. et G.* I(1). pl. 21, fig. 15 has a very good figure of the typical form.

Oberthür (1918) treats *literosa* as the same as the *erratricula*, Hb. 537.

Barrett says of the Variation—"Very slightly variable in the general colour of the forewings, from purplish-red to purple-grey, and in the degree of silvery-grey clouding."

Barrett records a specimen which "has these wings entirely dark purple, without any pale clouding; from Essex."

He also records another "strongly tinged with rusty-red and has no pale clouding."

Tutt notes, "rather paler" specimens from Forres, Scotland, "variation in the width of the median band," "also its intensity," and the "development of the longitudinal \equiv mark under the stigmata." "It is the most constant of all the British species of *Miana*."

The Names and Forms to be reviewed are:—

literosa, Haw. (1809) *Lep. Br.* 213.

erratricula, Hb. (1808-18) *Noct.* 537, Text 184.

ab. *suffuruncula*, Tr. (1816-25) *Schm.* V(2). 97.

ab. *suffuruncula*, (Frr.) (1825) *Neu. Beitr.* II. pl. 142, 4.

subsp. *onychina*, H.-S. (1856) *Neu. Schm.* 4, figs. 20-21.

race *subarcta*, Stdgr. (1897) *Iris.* X. 283, pl. IX. 14.

ab. *constricta*, Warr.-S. (1911) *Pal. Noct.* III. 172, pl. 40k.

ab. *subrosea*, Warr.-S. = Gn. (1911) *l.c.*

race *powelli*, Obthr. (1918) *Lep. Comp.* XVI., 135, pl. 496, f. 417.

Of *erratricula* Hübner, *Text Noct.* p. 184, says, "brownish red, grey shading; the wings dusky, marked with pale yellowish-brown centered stigmata." This cannot be *literosa*, which is "violet grey with a partial rosy brown flush" (Warr.-S.). Stdgr. also queries the identity, *Cat.* 165.

ab. ? *suffuruncula*, Tr. *Schm. Eur.* V(2). 97 (1816-25).

FIG.—Freyer, *Neu. Beitr.* II. pl. 142, f. 4.

ORIG. DESCRIP.—"Fresh specimens are very bright and shine with a mixture of silver and coppery colour on the forewings. This feature is sufficient to distinguish it from the other species, even if no other character is to be found.

"Head, neck and thorax grey with reddish and white hairs. The neck is darker edged, the thorax crested. The abdomen ashy coloured. The antennae clear brown, not toothed in the male. The feet grey, white ringed.

"The forewings have three areas, of which the first at the base and especially the third are very wide. They are both very glossy, towards the second area more silvery, towards the base and fringes more suffused copper colour. The first area reaches up to the orbicular. Towards the costa there lies a black streak, which ends before the orbicular. Then follow the orbicular itself as a longish blacker marking filled in with silvery and coppery colour. Under it lies a strong black square in place of the claviform. Beyond the orbicular and reniform stigma the third area begins; the reniform is wholly suffused with silvery. The waved band is fine, black points and finally there comes coppery colour. The fringes are double-edged dark-brown. The hindwings are uniform grey somewhat darker towards the outer margin and strongly glossy. The fringes again are brighter."

Hamps., *Lep. Phal.* VII. 389, treats *suffuruncula*, Ochs. and Treit. as well as *erratricula*, Hb. as synonyms of *literosa*.

Freyer, *Neu. Beitr.* II. 81, pl. 142, f. 4, figures the *suffuruncula*, Tr. from the actual specimen from which Treit. made his description many years before, *Schm.* V(2). 97. The figure wants the peculiar rosy colour of *literosa* and if that species, must be considered as a form of it. The band is certainly like that of typical *literosa* and not comparable with either *erratricula* or *fascimacula* or *bicoloria* (*furmen'la*). The example would not be a fresh specimen and therefore would not be "sehr schön und frangen mit einer silber—und kupferfarbigen Mischung auf den Vorderflügeln."

race *onychiona*, H.-S. *Neu. Schm.* 4 (1856).

FIGS.—*l.c.*, 20-21.

ORIG. DESCRIP.—"The more unicolorous the specimen is and the more indistinct all the marking is, the more sharp do the veins stand out, while in the darkest example they are resolved into small dots; the central area is always broader than in *erratricula*, the orbicular is more oblique and more produced, the black streak in cell 1b of the central area is always wanting."

"Compared with *erratricula*(sic): 23 examples which I have before me are quite different from that. There is wanting the bright cinnamon-brown suffusion, the ground colour is a pale red grey mixed with

shining grey, the latter colour being most apparent on the reniform and on the veins."

Hamp. *Cat. Lep. Ph.* VII., 389 (1908) "Much paler; forewing grey white, the marking obsolescent."

Oberthür says, *Lep. Comp.* XVI. 135. "With wings unicolorous and of a uniform clear ochre tint. None of the ordinary spots or lines are present on the forewings above. Of a uniform clay or dust colour." Heligoland.

race *subarcta*, Stdgr. *Iris.* X. 283 (1897).

FIG.—*l.c.* plt. 9, f. 14.

ORIG. DESCRIP.—"Herr J. Paulus sent me a tolerably fresh (only somewhat damaged) example, 28mm. in expanse, a ♀ caught at light on June 11th at Jerusalem, to which a ♂ sent much later by him measuring 25mm. belongs. I see now that both these insects can only be a local form of *H. literosa*, to which a tolerably perfect ♀ 30mm. in expanse caught in Sicily by Herr Kalchberg and one found by Haberhauer in mid August at Lepsa in N.W. Central Asia belong. I have described the last in the *Stett. Ent. Zeit.* 1882, p. 41, as "*Literosa* with very little reddish suffusion." Thus it is apparent, that these var. *subarcta* on the average are larger than *literosa*. A chief point of distinction from typical English and German *literosa* is the obsolescent nature of the reddish suffusion of the forewings, which in the Palestine specimen is quite absent. This absence of the reddish coloration mislead me especially to identify (compare) the large female from Palestine with the somewhat larger *arcta*, Led., and the equally large *arctides*, Stdgr., from the Amur area. From both these forms very similar to one another *literosa* is to be distinguished, and also from *subarcta* by the lighter almost markingless underside. There shows in the first two forms distinctly, broad, dark transverse lines particularly on the lighter hindwings which also bears a sharp, dark discal spot, while the almost white-grey underside of the wings of *literosa* is mostly not marked, or only on the hindwing bears a very obsolescent dark discal spot and traces of an obsolete transverse line. The v. *subarcta* differs from the confusedly tolerably variable Central-Asian *literosa* (unter eiander), moreover by no constant difference; the middle area of the forewing between the two transverse lines, is mostly wider and produced somewhat blacker or black margined, by which *subarcta* appears very like the *arcta* form."

Hamp. says, *l.c.* 389, "Larger; forewing not tinged with rufous."—Sicily, Palestine, Ala Tau.

ab. *constricta*, Warr.-Seitz *Pal. Noct.* III. 173 (1911).

FIG.—*l.c.* plt. 40k.

ORIG. DESCRIP.—"Principally confined to the ♂♂; the median area between the two lines is narrowed and much darker, especially in the two folds, and the red flush is less developed."

ab. *subrosea*, Warr.-Seitz. *Pal. Noct.* III. 173 (1911).

FIG.—*l.c.* plt. 40k.

ORIG. DESCRIP.—"The darker grey and fuscous tints may be reduced and the whole forewing suffused with rosy brown, the whole thorax also showing rufous." A common form in England.

The ab. A. of Gn. is this form (1925) *Noct.* V. 216 "of a rosy grey, much suffused with reddish."

race *powellii*, Obthr. *Lep. Comp.* XVI. 135 (1918).

FIG.—*l.c.* plt. 496, f. 4117.

ORIG. DESCRIP.—"The Algerian race is more uniformly grey and the appearance more frail. Divested of all trace of red." Greyville. "It is not exactly referable to the Sicilian *subareta*, Stdgr."

The figure is larger than the average British races and the colour is quite distinctive dull orange apparent even through the markings. The stigmata are somewhat lighter. There is a transverse narrow dark band inside the orbicular, a similar but wider band between the orbicular and reniform which is curiously but clearly interrupted by the lighter claviform, also a slight dark chevron lies on the costa behind the apex. The hindwing has a dark marginal band of some width; the ground colour is not a shade lighter than on the forewing.

Phoethedes, Led. (1857) New., Stdgr., Tutt, South. [*Hadena*, Schrnk. (1802) Meyr.: *Apamea B.* Treit. (1816-25), Bdv., Dup., H.-S., Evers.: *Oligia*; Hb. (1822), Warr.-S., Hamp.: *Miana*, Steph. (1829), Dbldy., Stain., Stdgr., Barr., Splr., Culot.] *captivuncula*, Tr. (1816-25).

Tutt *Br. Noct.* I. 107 (1891): Barr. *Lep. Br. Is.* V. 24, plt. 188 (1899): Stdgr. *Cat.* IIed. 165 (1901): Splr. *Schm. Eur.* I. 182, plt. 51, 45 (1906): South *Moths Br. Is.* I. 277, plt. 134, figs. 17-18 (1907): Hamp. *Lep. Phal.* VII. 394 (1908): Warr.-Seitz. *Pal. Noct.* III. 174, plt. 41b (1911): Culot *N. et G.* I(1). 123, plt. 23, f. 7-9 (1909-13).

Dup. *Hist. Nat. Noct.* VII.(1), has a good fig. of the variegated continental form.

H.-S. *Noct.* II., figs. 173, 174, are very variegated forms of the purple-red continental suffused form.

Meyr. *Hand. Ied.* 136, places *expolita* as not differing from *captivuncula*, and also refers it to Stain., possibly correctly in part.

Warr.-Seitz, *l.c.* plt. 41b, figures the typical form and *expolita*, Dbldy. In the typical figure the purple-red colour predominates, but in that of *expolita* it is completely absent.

Culot, *N. et G.* I(1). plt. XXII. figs. 7, 8, 9, gives 3 very good figures of the variegated purple-red continental form.

The Forms and Names for consideration are:—

captivuncula, Tr. (1825) *Schm.* V(2), 96.

subsp. *expolita*, Dbldy.-Stain. (1855), *Stain. Ann.* I. 41 (63).

ab. *unica*, Fr. (1858), *Neu. Beitr.* VII. 68, plt. 640.

subsp. *tinctoria*, Kane (1895), *Ent.* 165.

ab. *captivunculoides*, Hamp. [Strand] (1908-1915), *Lep. Phal.* VII. 394 [Arch. Nat. ges. LXXXI. 154. Abt. A. Heft. 11.]

ab. *albosuffusana*, Hamp. [Strand] (1908-1915) *l.c.*

Tutt dealt with (1) *captivuncula* the purple-red continental type, (2) the grey British form *expolita*.

Barrett says of the Variation—"Not very variable, but there is a tendency in the male to the brighter purple-red colour of the female; and in the West of Ireland this is accentuated, so that all the specimens from that district are of a much richer, brighter red colour.

He records an example from Durham which "has the reniform stigma distinct with white margins and a broadly white second line."

He also records another which "has a rich red central band and a white stripe on each side of it."

And of another he says "has the second line, not only broadly white, but strongly angulated."

The Russian race described by Eversman, *Noct.* pt. IV. 41 (1856), has no purple-red and from the description more resembles the British dark grey form.

ab. *unica*, Fr. *Neu. Beit.* VII. p. 68 (1858).

FIG.—*l.c.* pl. 640, f. 1.

ORIG. DESCRIPT.—"This striking little Lepidopteron stands nearest to *N. latruncula*. It is smaller and smoother than *latruncula*. Thorax and forewing black with purple-red suffusion. The stigmata are purple-red and fairly distinct. From the base runs a purple-red thin streak through the first paler scarcely visible band. Beyond the reniform lies a white narrow band toothed on the outer edge across the whole breadth of the wing up to the inner margin, which divides the forewing into two areas. To this white band succeeds a purple-red dark marbled area. The fringes are black grey. The abdomen and the hindwings as well as the whole underside is dark, black-brown."

The figure and description only agree in a general way. The detail is partly incorrect in either figure or description. More probably the figure wants the delicate detail of the description. Warr.-Seitz, *l.c.* p. 174, treats *unica*, Fr., as of the type form.

subsp. *tincta*, Kane, *Ent.* 155 (1895).

ORIG. DESCRIPT.—"A richly coloured form found by Mr. Birchall. Forewings: basal third of a warm grey, somewhat mottled followed by a deep rose-coloured band reaching from costa to inner margin, bordered interiorly by a very sinuous festooned line of purple-brown, edged externally with grey, and exteriorly by one of similar colours, deeply elbowed towards the outer margin of the wing; the outer third of the wing is of a shining pink, with a dark ruddy patch along the costa, but not reaching to the apex, and a clear whitish suffusion along the lower and outer portion of the red central band, corresponding to the whitish patch shown in the same position in *M. strigilis* and *M. fasciuncula*. Hindwings of a sooty-brown, shot with a ruddy reflection. All fringes of a dirty grey. Thorax of a dingy brown; abdomen paler." Local but plentiful. Ardrahan, Ireland.

Hamp., *Cat. Lep. Ph.* VII. 395 (1908), "Forewing with the basal area grey, the medial area deep pink, the terminal area pale glossy pink."—Ireland.

ab. *captiunculoides*, Strand, *Hamp. Cat. Lep. Ph.* VII. 394 (1908-1915).

ORIG. DESCRIPT.—"Forewing with the postmedial area rufous without white beyond the postmedial line."

ab. *albosuffusana*, Strand, *Hamp. Cat. Lep. Ph.* VII. 395 (1908-1915).

ORIG. DESCRIPT.—“Forewing with the ante- and postmedial areas largely suffused with white.”

Celaena, Steph. 1829: Gn., *Stdgr.*, Barrett, *Splr.*, South, *Hamp.*, *Cul.* [*Hadena*, Schrnk. (1802), Meyr.: *Apamea*, Ochs. and Tr. (1816-25), Curt., Fr.: *Oligia*, Hb. (1822), *Hamp.*, Warr.-S., Matsu.: *Gortyna*, Hb. (1822), Evers.: *Luperina*, Bdv. (1829), Hoffm.: *Neuria*, Gn. (1841), H.S.] *haworthii*, Curt., 1829.*

Tutt, *B.N.* I. 107 (1891): Barrett, *Lep. B.I.* V. 1, pl. 185 (1899): *Stdgr. Cat.* IIIed. 169 (1901): *Splr. Schm. Eur.* I. 186, pl. 39 (1905): *South Moths Br. Is.* I. 269, pl. 128 (1907): *Hamps. Lep. Ph.* VII. 195 (1908): Warr.-Seitz, *Pal. Noct.* III. 174, pl. 41b (1911): *Culot, N. et G.* I. (1), 142, pl. 26 (1909-13).

Steph. *Cat.* II. 87, gives Esp. *Abbild.* IV. pl. 166, f. 7, for *lancea*. However there is no fig. 7 to pl. 166, nor can I trace the name in Werneberg's *Beitr.*

Eversmann in *Bull. Mosc.* p. 550 (1842) and in *Fn. Volg.* p. 72 (1846) described a species *morio*, which in his subsequent *Noctuities Bull. Cazan*, pt. II. p. 395 (1855) he identified with typical *haworthii*, and also with Freyer's *erupta*.

Wood's figures, *Ind.* 283, is fairly typical, but not variegated as much as the usually occurring type; 284 is *lancea* of a lighter brown with light hindwings; 285 is *hibernica* a darker, richer brown; both the last are more uniform in coloration with suppression of the orbicular.

Freyer's fig. of *morio*, *N. Beitr.* V. 388, 1, is a uniformly red brown with white-ringed reniform stigma from which a few white lines run outwards, a white submarginal line, and marginal white dots. This is much like one of the figures of Graslin, *Ann. Soc. ent. Fr.* (1848). It is of good size. His fig. 472, *l.c. erupta*, has a similar reniform but white inside, a white orbicular, a white inner marginal line and numerous white transverse lines along the submarginal area. This is smaller. Neither is like typical *haworthii*.

H.-S. says that the *morio* of Freyer pl. 388, 1, is unrecognisable. In his *Synonymic Catalog-Index*, he cites *lyucea*, Steph. (recte *lancea*) but omits it in the text.

Graslin, *Ann. Soc. ent. Fr.*, p. 58 (1848) gives 4 good figures. 3, no veins white; 5, veins in submargin only white; 4, veins generally white but not continuous; 6, veining white continuously.

Tutt says *morio* runs Freyer's *erupta* closely (*B.N.* 109).

H.-S., *Sys. Bearb.* figs. 467-8, has two excellent figures of the typical form, ♂ and ♀.

Fig. 14 in Humph. and Westw. is an average well marked example of the typical form and of good size. None of the marking in either fig. is white, all are rich yellow.

* Hampson gives the weird spelling *havorthii*.

The fig. of *tripuncta* in H. and W., plt. 38, f. 15, does not agree with the description, p. 182; it does not show the subapical blotch near the apex below the costa.

The fig. of *lancea* in H. and W., plt. 38, f. 16, also is defective, only the R. forewing being nearly uniformly coloured.

South, *Moths Br. Is.*, I., plt. 128, has a very good typical figure.

Seitz, *l.c.* p. 174, figures typical *haworthii*, plt. 41b, *erupta*, plt. 41b, and *hibernica*, plt. 41b, all good figures.

Warr.-Seitz treats *tripuncta* as a synonym of *haworthii*; *morio* a synonym of *erupta* and *lancea* a synonym of *hibernica*.

Culot, *N. et. G.* I(1). plt. 26, gives two figs., 1 a very poorly marked, typical devoid of much light markings, and which in the text he says agrees with *erupta*.

In describing the Variation Barrett says—"Not usually very variable, except in the degree of whiteness of the nervures, which sometimes is much obscured or even obliterated. This in some instances extends to the whiteness of the orbicular stigma. There is a little difference also in the ground colour, which sometimes is of a redder chocolate."

Barrett records a specimen "of a pale grey, but with the paler markings quite normal."

He records also one "of a very rich purple-red and another extremely pale olive-brown."

Dr. Cockayne says (in lit.) "On some of my York specimens the ground colour is very pale brown or buff. In East Aberdeenshire ones it is nearly black. The orbicular varies much in size and shape (and in colour) and it and the reniform are very white, in most ones."

The forms to be discussed are—

haworthii, Curtis (1829) *Br. Ent.* VI. 260.

subsp. *hibernica*, Steph. (1829) *Ill.* III. 16. pl. 25.

ab. *lancea*, Steph. (1829) *l.c.*

ab. *tripuncta*, Curt. (1829) *l.c.*; H. and W., I. plt. 38, f. 16.

ab. *erupta*, Freyer (1845) *Neu. Beitr.* V. 150, plt. 472.

race *morio*, Evers. (1842) *Bull. Mosc.* III. 550; Freyr. *l.c.* plt. 388.

ssp. *sachelinensis*, Matsu. (1925) *Jr. Coll. Agr.* XV. 140. plt. 11.

Tutt treats of (1) the typical *haworthii*: (2) *hibernica* the Irish form very red: (3) *lancea* of small size nearly uniform in coloration: (4) *tripuncta* both stigmata distinct and pale, and a pale patch near the subapical costa: (5) *morio* the Volga form: (6) *erupta* with reniform and orbicular and with numerous other white markings.

Tutt gave Freyer's description and figure as the original of *erupta*, but Germar's figure and description in 1827 was the original.

ab. *erupta*, Germar. Ahrens' *Fn. Insect. Eur.* XXI. (1827).

FIG.—*l.c.* plt. 15.

ORIG. DESCRIP.—"Affinis *Agrotis celtæ* (*Fn. Eur. fasc.* IV. Hb. 16); *A. lidea*, Hb. Tr.; *minime*, Cram. sed minor. Caput et thorax nigra, antennis setaceis. Abdomine cinereum. Alae anticae atomiis cinereis basi et ad costam adspersis, maculis ordinariis albis, fascia postica repando-dentata, squamis fuscis et maculis sagittatis nigris variegata

albida. Costa maculis aliquot albis. Ciliae nigrae, griseo-maculatae. Pagina inferior alarum anticarum nigro-fusca maculis et fusca paginae superiores. Alae posticae nigricantes, basi dilutiores, subtus concolores."

subsp. *sachalinensis*, Matsu. *Jn. Coll. Agri. Sapporo*. XV. 140 (1924-5).

FIG.—*l.c.* pl. XI. 16, ♂ (a very bad indistinguishable figure in black and white).

ORIG. DESCRIp.—"Reniform much larger, being bifid at the veins 3 and 4, and on its outside with a broad, oblique, fuscous patch; at the termen in each interspace of 4 and 5 with a fuscous patch; marginal band relatively broad, and of a blackish colour; fringe yellowish, traversed by a fuscous line." S. Saghalian.

I am indebted to Dr. Cockayne for pointing out that "*Helotropha leucostigma* is congeneric with *Celaena haworthi* both by larval characters and by genitalia."

Mamestra (Ochs. and Tr. 1816) Hb. (1822) Tr. (1825).

The genus name *Mamestra* was proposed by Ochs. and Tr. in 1816 (*Schm.* IV. 76) but not described. In 1825 Treit. (*Schm.* V(2), 127) described the genus quite fully. But in 1822 (*Verz.* 214) Hübner had adopted the genus name and described it briefly (but inadequately). Hence it seems that the genus should date from 1822.

One finds the utmost divergence of opinion as to the contents of this genus and the more modern systematists discard the use of it. The six species included by Tutt have been shifted about singly or in groups in at least 14 different genera.

In 1816 Ochs. and Tr. proposed the following species for *Mamestra*—*pisi*, *splendens*, *oleracea*, *suasa*, *aliena*, *abjecta* (*nigricans*, View.), *chenopodii*, *albicolon*, *brassicae*, *furva* and *persicariae* (*Schm.* IV. p. 76). In 1825 Treit adequately described the genus and added *rubrivena* the 12th species. (*Schm.* V(2). p. 127). But in the meantime Hübner (*Verz.* p. 214) in 1822 had adopted and described the genus including in it the 3 species *pisi*, *unanimis* and *leucophaea* only, of which *pisi* alone was in the original genus proposed by Ochs. and Tr. Hence it seems that the genus should date from Hb. (1822).

Herr.-Schäff., *Sys. Bearb.* (1845) suppressed the name *Mamestra* and placed the 6 species we are concerned with in his huge omnibus genus *Polia*.

Guenée in 1852 (*Noct.* V.=I. p. 188), places about 25 species in the genus including our six species, *abjecta*, *anceps* (*sordida*), and *albicolon* in his group II.; *furva*, *brassicae* and *persicariae* in his group III.

Stdgr. in 1861 (*Cat. Ied.* 39) places *brassicae*, *persicariae* and *albicolon* in *Mamestra*, and *furva*, *abjecta* and *infesta* = *sordida* in *Hadena*. In 1871 (*Cat. Iled.* 101) he copied this arrangement.

South in the *Entomologist Syn. List.* (1884) placed the whole 6 in the genus *Mamestra*. Although his List was mainly an adaptation of Stdgr. *Cat.* 1871, he was no doubt influenced by the Doubleday List,

which British collectors of the day used almost exclusively, and accepted *Mamestra* as in that List. Doubleday no doubt, based his arrangement on the work of Guenée. This List took the place of Doubleday's List and it was from it that Tutt selected his genera and species.

Meyrick (*Hand.* 79) in 1895, did not use *Mamestra*, but put *brassicæ*, *persicariæ* and *albicolon* in the genus *Melanchra*, Hb. and the other three species in *Hadena*.

Stdgr. in 1901 simply copied his own List of 1871.

In his *Moth of the Brit. Is.*, South (I. 270) in 1907, retained the 2 species *persicariæ* and *albicolon* only for *Mamestra*, selected *abjecta*, *sordida* and *furva* for the *Hama* of Stephens, and *brassicæ* he put in *Barathra* as Hübner had done.

Pierce in the following year 1908 (*Gen. Noct.* 38) placed *abjecta* in the genus *Nemria*, Gn. and the other five of Tutt's species with *saponariæ* in *Mamestra* remarking that from a genitalic view, *Mamestra* as constituted by him was not separable from *Apamea* and all should be included with *Xylophasia*.

Hampson, *Lep. Phal.* (VII. 208) in 1908, suppressed *Mamestra* and used the genus *Trachea*, (Ochs. and Treit) Hb. for *abjecta* = *nigricans* = *oblonga*, Haw., *sordida* = *anceps* and *furva*, placed *albicolon* in the *Trichoclea*, Grote, *brassicæ* in *Barathra*, and *persicariæ* in *Polia*, Ochs. and Treit.

Warren in Seitz in 1911 (*Pal. Noct.* III. 167) placed *abjecta* and *sordida* in *Parastictis*, Hb., *furva* in *Crymodes*, the other three as in Hampson, the name *Mamestra* being completely ignored.

Meyr. *Revised Brit. Lep.* (1927), repeated his action of 1895.

Evidently with so many diverse views we are far from stability in this group of our Noctuids.

Mamestra, Ochs.-Treit. (Hb.) Treit. (1816-1822-1825), Tutt, South. [*Hadena*, Schrnk. (1802), Hb., Stdgr., Cul., Meyr.: *Polia*, Ochs.-Treit. (1816-25), H.-S.: *Trachea*, Ochs.-Tr. (1816-25), Hb. (1822), Hamp.: *Hama*, Steph. (1829), South: *Nemria*, Gn. (1841-52), Dup. (1844).] *abjecta*, Hb. (1818) = [*nigricans*, View. (1789), nec. f'b., Hb. (preoc.).]

Tutt describes Hübner's figure, "Anterior wings of deep, but clear brown (almost reddish) grey, an abbreviated basal transverse line and a complete one in contact with the inner edge of the orbicular, both double; a short dark (black) longitudinal streak under base of median nervure, orbicular distinct, reniform outlined in white (lightish); an oblique line from costa to median nervure between stigmata; a wavy transverse line just beyond reniform, followed by four (five) short longitudinal wedge-shaped spots. The dark longitudinal mark under the stigmata in Newman's figure. (*British Moths*, p. 298) is absent. The hindwing dark grey on outer edge, with pale base and indistinct (no) lunule." The interpolations are mine from my copy of Hübner's *Noctua*.

nigricans, Vieweg. *Tabell. Verz.* II. 66 (1789) [placed between *pisi* and *persicariae* and thus shows the relationship as interpreted by Vieweg].

ORIG. DESCIP.—“Antennae, head, thorax and fore-wings are blackish. The last have a few paler transverse lines, and the usual spots depicted only very indistinctly. On the outer margin and parallel with it lies a row of dark black, separate triangular spots, and on the costa away from the apex stand four small whitish dots. The hindwings and the body are grey,” Mark Brandenburg. He refers to Fab. *Sys. Ent.* 616, whose short Latin description he copies.

Fab. *Sys. Ins.* II. 238 (1781) gives *Fb. Sys. Ent.* 616; Linn. *Sys. Nat.* XIII. ed. 855; and *Fn. Suec.* no. 1220 as references to *nigricans*. The description in Latin in these authors “*Alis nigricantibus, maculis ordinariis pallidioribus*” with the added comment of Linné “*fusco-nigricantes magis quam in alia ulla nostratum*; cannot refer to *abjecta*, Hb., 539, (= *nigricans*, View.)

Werneburg, *Beitr.* II. 215, agrees that *abjecta*, Hb. is *nigricans*, View.

Many authors have mixed the *nigricans*, View. with the *nigricans*, Linn. and Fab. as did Vieweg himself, although his description is undoubtedly that of *abjecta*, Hb. The *nigricans* of the other early authors are emphasised “black” and have no triangular black spots in the submargin.

Treit. *Schm.* V(1). 141, puts *nigricans*, View. under *fumosa*, Hb. = *nigricans*, L. in *Fn. S.* and again on p. 186 under *aethiops* = *nigricans*, Hb. touches on this intricate complex in the application of the name *nigricans* by Linn., Schiff., Fab., Esp., de Vill., View., Hb., and Ochs. Then in *l.c.* V(2). he very exhaustively and clearly states the case with the following results.—I. That the *nigricans*, Schiff. and Fab., Illiger, Götze and Rossi belongs to *fumosa*. II. That *nigricans*, Esp. goes best with *fumosa* and is much too small for *abjecta*. III. That *nigricans*, Linn. agrees less with *abjecta* than with *fumosa*. Treit goes on to say that he cancels his citation of *nigricans*, View. to *fumosa* as held by Ochsenheimer, and confirms the citation to *abjecta*, Hb. 539, noting that *nigricans*, Schiff. is cited to *abjecta*, in error.

Stephens, *Ill.* II. 193, describes and figures, *plt.* XXIV. 2, *nigricans*, which he ascribes to Vieweg. The figure is a very fair representation of our ordinary obscurely marked *abjecta*. There is a blue mother-of-pearl sheen on all 3 figures on the plate, which no doubt is not intended.

Wood's figure of *nigricans* (after Steph.) is a very poor unrecognisable one. *Index*, *plt.* XII., f. 254.

Freyer, *Neu. Beitr.* II. 92, calls attention to the many authors who have used the name *nigricans*, which, as Treitschke had stated after full examination, that *abjecta*, Hb. 539 and *nigricans*, View. referred to the same species, and that the other authors' *nigricans*, should be referred to *fumosa* and *aethiops*, the *nigricans*, Hb. 709.

Hampson, *l.c.* 208, identifies *nigricans*, View. as this species as well as the *oblonga*, Haw. *Lep. Brit.*, 188 (1809). As the name *nigricans* is not available, he uses *oblonga*, Haw. as the prior specific name. In this last action he is followed by Warr.-Seitz. *Pal. Noct.* III. but not by Meyr. in using *oblonga* as the name of this species.

SPECIAL INDEX.

By Hr. J. TURNER, F.E.S., F.R.H.S.

VOL. XLIV. (new series) (1932.)

The Entomologist's Record & Journal of Variation.

Coleoptera arranged in order of Genera. The other orders arranged by Species. Genera, Species, etc., new to Britain are marked with an asterisk, those new to Science with two asterisks.

	PAGE		PAGE
<i>The following Lists of mere names are not indexed.</i>			
List of Coleoptera, in a Willow Swamp in Windsor Forest, 5-6; at Fontainebleau and not in Windsor Forest, 35; pests of basket willow, 47; both in Windsor and Fontainebleau Forests, 35; new last year in Devonshire, 150; attracted to burnt, areas, 36; harmful in both Windsor and Fontainebleau Forests, 36; taken by sweeping, at Slapton and Hallsand, Devon	151	Calodera aethiops	5
		riparia	5
		Carabidae	5
		Carabus auratus	55
		violaceus	100
		Cephennium edmondsi	150
		pallida	150
		Cerambycidae	34
		Cetonia hirtella	56
		Ceuthorhynchidius palustre	5
		rufulus	5
		Choleva nigricans	6
		Chrysomela cerealis	35
		Chrysomelidae	6
		Cicindela germanica	35
		hybrida	56
		Coccinella bipunctata	55
		Coccinellidae	6
		Corymbites purpureus	55
		Crepidodera ventralis	151
		Cryptocephalus aureolus	72, 73
		Cryptohypnus dermestoides	151
		<i>ab.</i> 4-guttatus	151
		Cryptophagidae	6
		Curculionidae	6, 34
		Dasytes plumbeus (oculatus)	5
		Dermestes lardarius	73
		Emus hirtus	148
		Enicmus transversus	6
		Euconnus hirticollis	6
		Gabrius nigrifulus	150
		pennatus	150
		Geotrupes	11
		Gnorimus nobilis	143
		variabilis	36
		Gyrinidae	51
		Gyrinus elongatus	151
		urinator	151
		Haemonia mutica	148
		<i>v.</i> curtisi	148
		appendiculata	148
		Helophorus laticollis	5
		Hydrophilidae	5
		Ipidae	34
		Laccobius nigriceps	151
		Larinus sternus	72
		Lathrydiidae	6
Abax striola	57		
Acupalpus elegans	147		
Agabus arcticus	77		
bipustulatus	151		
chalconatus	151		
melanarius	151		
Agapanthia asphodeli	81		
cardui	56, 81		
Alaeocharinae	51		
Amara strenua	147		
Anthicidae	6		
Anthicus antherinus	6		
Aphodius sticticus	6		
Apion urticarium	151		
Atheta	5		
atramentaria	150		
clientula	151		
euryptera	150		
flavipes (halobrectha)	150		
graminicola	151		
sulcifrons	151		
vestita	151		
Bagous argillaceus	148		
Baris scolopacea	148		
Berosus spinosus	147		
Blaps mucronata	72		
Brachelytra	51		
Byctiscus betulae	143		
Byturus fumatus	93		
tomentosus	93		

	PAGE
<i>Lema erichsoni</i>	151
<i>puncticollis (cyanella)</i>	151
<i>Leptura aethiops</i>	57
<i>Lionychus quadrillum</i>	150
<i>ab. bipunctatus</i>	150
<i>ab. unicolor</i>	150
<i>Longitarsus pellucidus</i>	5
<i>Lycidae</i>	31
<i>Malachius aeneus</i>	56
<i>elegans</i>	151
<i>marginellus</i>	151
<i>viridis</i>	151
<i>vulneratus</i>	148
<i>Medon</i>	162
<i>pectiniventris</i>	151
<i>Melanophthalma fuscula</i>	6
<i>Melanotus vittatus</i>	57
<i>Meligethes morosus</i>	5
<i>Meloë brevicollis</i>	72
<i>Melolontha vulgaris</i>	56, 72
<i>Metabletus foveatus (foveolus)</i>	150
<i>ab. unicolor</i>	150
<i>Micrambe villosa</i>	5
<i>Mordellidae</i>	6
<i>Mylabris variabilis</i>	74
<i>Necrophorus mortuorum</i>	56
<i>Nitidulidae</i>	6
<i>Oberea oculata</i>	35
<i>Olibrus aeneus</i>	6
<i>Othius laeviusculus</i>	150
<i>Oxygoda maritima</i>	150
<i>nigrocincta</i>	5
<i>salictaria</i>	5
<i>Paederus fuscipes</i>	150
<i>riparius</i>	150
<i>Pagodus luridipennis</i>	147
<i>Phalacridae</i>	6
<i>Philonthus bimaculatus</i>	150
<i>varius</i>	150
<i>Phyllopertha horticola</i>	57
<i>Polystichus connexus</i>	147
<i>Proteinus macropterus</i>	5
<i>Pselaphidae</i>	6
<i>Psilothrix cyaneus (nobilis)</i>	151
<i>ab. viridis</i>	151
<i>Pyrochroa coccinea</i>	131
<i>serraticornis</i>	57
<i>Pythidae</i>	6
<i>Rhinosimus planirostris</i>	6
<i>Rhynchites germanicus</i>	151
<i>Scarabaeidae</i>	6
<i>Scopaeus abbreviatus</i>	151, 162
<i>minutus</i>	150
<i>ryei</i>	150
<i>Scydmaenidae</i>	6
<i>Selatosomus cruciatus</i>	35
<i>Silpha obscura</i>	73
<i>thoracica</i>	72
<i>Silphidae</i>	6
<i>Spondylis buprestoides</i>	35
<i>Staphylinidae</i>	5, 48
<i>Stenichnus</i>	162
<i>pusillus</i>	150

	PAGE
<i>Strangalia armata</i>	143
<i>aurulenta</i>	42
<i>Strophosomus retusus</i>	151
<i>Telephoridae</i>	6
<i>Telephorus rustica</i>	56, 57
<i>Toxotus meridianus</i>	43
<i>Trechus fulvus (lapidosus)</i>	151
<i>Trichius fasciatus</i>	74
<i>Trichodes alvearius</i>	57
<i>Tricopterygidae</i>	6
<i>Trichopteryx</i>	5
<i>fratercula</i>	6

DIPTERA.

<i>alneti, Didea</i>	123
<i>anthracina, Psilota</i>	93
<i>Asilidae</i>	13
<i>bipunctatus, Sargus</i>	42
<i>bisignatus, Theriopectes</i> 37, 38,	39
<i>borealis, Theriopectes</i>	37
<i>borussica, Hydrotaea</i>	123
<i>bovinus, Tabanus</i>	38
<i>cristatus, Trichopticus, Lophosceles</i>	123
<i>Chrysozona (Haematopota)</i>	37
<i>Chrysops</i>	38
<i>cryptarum, Eristalis</i>	123
<i>discolor, Bombylius</i>	55
<i>distinguendus, Theriopectes</i>	39
<i>fasciolatum, Chrysotoxum</i>	57
<i>ferruginea, Coelomyia</i>	74
<i>festivum, Chrysotoxum</i>	55, 73
<i>ferox, Echinomyia</i>	123
<i>flavidipennis, Chortophila, Delia,</i>	
<i>Nudaria</i>	122, 131
<i>floralis, Nemorilla</i>	10
<i>glaucescens, Fannia</i>	123
<i>glaucopsis, Tabanus</i>	123
<i>glaucus, Tabanus</i>	37
<i>grisea, Hammomyia</i>	123
<i>Haematopota = Chrysozona</i>	37
<i>haemorrhoidalis, Sarcophaga</i>	122
<i>heterobia, Rhabdochaga</i>	47
<i>Hylephila</i>	122
<i>infumata, Platypeza</i>	122
<i>intermedia, Didea</i>	123
<i>irritans, Hydrotaea</i>	123
<i>italicum, Chrysotoxum</i>	57
<i>laternarius, Ischyrosyrphus</i>	122
<i>latifrons, Sarcophila</i>	122
<i>Lophosceles = Tricopticus</i>	123
<i>linearis, Dioctria</i>	122
<i>meridionalis (sudeticus ssp.),</i>	
<i>Tabanus</i>	38
<i>miki, Tabanus</i>	37
<i>modesta, Helomyza</i>	122
<i>montanus, Theriopectes</i>	37, 39
<i>morissii, Beris</i>	122
<i>mussitans, Arctophila</i>	123
<i>neilseni, Ernestia</i>	122
<i>obtusa, Hylephila</i>	122
<i>plexus (sudeticus var.), Tabanus</i>	38, 39
<i>personata, Hylephila</i>	122
<i>pipiens, Syritta</i>	56